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FILE 'WPIDS' ENTERED AT 07:50:05 ON 03 MAY 2004  
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=> d que 110

L1 30 SEA ("TIJSMA E"/AU OR "TIJSMA E J"/AU OR "TIJSMA EDDY"/AU OR  
 "TIJSMA EDZE J"/AU OR "TIJSMA EDZE JAN"/AU)  
 L2 56 SEA ("TERLINGEN J B A"/AU OR "TERLINGEN J G A"/AU OR "TERLINGEN  
 J P M"/AU OR "TERLINGEN JOHANNES G A"/AU OR "TERLINGEN  
 JOHANNES GIJSBERTUS"/AU OR "TERLINGEN JOHANNES GIJSBERTUS  
 ANTONIUS"/AU)  
 L3 7 SEA ("HAAS SCHRIJEN S"/AU OR "HAAS SCHRIJEN SASKIA"/AU)  
 L4 5 SEA ("VRIESEMA H H"/AU OR "VRIESEMA HEIN HERMAN"/AU)  
 L5 68 SEA (L1 OR L2 OR L3 OR L4)  
 L6 58 DUP REM L5 (10 DUPLICATES REMOVED)  
 L7 10 SEA L6 AND FERTILIZ?  
 L8 2 SEA CONTROL (S) RELEAS? AND L6  
 L9 3 SEA THERMOPLAS? AND L6  
 L10 10 SEA L7 OR L8 OR L9

=> d bib ab 1-10

L10 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2003:912658 HCAPLUS  
 DN 139:380864  
 TI Coated agrochemicals released using trigger materials  
 IN **Tijisma, Edze Jan; Terlingen, Johannes Gijsbertus**  
**Antonius; Haas-Schrijen, Saskia; Vreisema, Hein Herman**  
 PA OMS Investments, Inc., USA  
 SO U.S. Pat. Appl. Publ., 8 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2003215657	A1	20031120	US 2002-146314	20020515
WO 2003097014	A1	20031127	WO 2003- <del>US14886</del>	20030508

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,  
 CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,  
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,  
 PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,  
 UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU,  
 TJ, TM  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG,  
 CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC,  
 NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
 GW, ML, MR, NE, SN, TD, TG

PRAI US 2002-146314 A 20020515

AB A coated triggered start product is formed from a particulate core

material comprising at least one water soluble active constituent and at least one coating layer applied on the particulate core material, specifically an agrochem. The coating layer causes the product to exhibit "lock-off" type release characteristics, whereby release of the active constituent of the core material from the coated product is completely suppressed until release is initiated by application of a trigger material to the coating layer. Trigger materials are biol. release agents, such as enzymes and microorganisms, and chemical release agents, such as surfactants.

L10 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2002:675971 HCAPLUS  
 DN 137:216434  
 TI Coated controlled-release formulation for agrochemicals  
 IN Tijlma, Edze Jan; Terlingen, Johannes Gijsbertus  
 Antonius; Haas-Schrijen, Saskia; Vriesema, Hein  
 Herman  
 PA Oms Investments, Inc., USA  
 SO PCT Int. Appl., 30 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002068363	A2	20020906	WO 2002-US5875	20020228
	WO 2002068363	A3	20030109		
	WO 2002068363	B1	20031120		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	US 2002168318	A1	20021114	US 2001-795840	20010228
	US 6656882	B2	20031202		
	EP 1370135	A1	20031217	EP 2002-794943	20020228
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			
	US 2004069033	A1	20040415	US 2003-684162	20031010
PRAI	US 2001-795840	A	20010228		
	WO 2002-US5875	W	20020228		
AB	A controlled release product is provided having a suppressed initial release period and a predetd. longevity. The product includes a particulate water-soluble core material and a semi-permeable coating layer applied on the core material for controlling the release rate of the core material. The semi-permeable coating layer is formulated in accordance with an equation to provide a release rate wherein initial release of core material from the product is suppressed so that <15 weight % of core material is released from the product within a 24 h period after application of the product and wherein longevity of release, at ambient temperature, between the time of application and the time at which ≥75 weight % of the core material is released from the product is ≤60 days. WVTR is the water vapor transmission rate of the semipermeable coating expressed in g.µm/m2.day. WVTR = $\phi \cdot \delta / \pi d^2$ , where $\phi$ is the water diffusion rate (water flux) through the semipermeable coating, expressed in g/day; $\delta$ is the thickness of the coating layer expressed in µm; and d is the average diameter of the particulate core material expressed				

in m.

L10 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2001:808998 HCAPLUS  
 DN 135:330996  
 TI Water-soluble solid **fertilizer** compositions  
 IN Eltink, Michael Gustaaf; Van Roij, Philip; **Tijmsma, Edze Jan;**  
**Terlingen, Johannes Gijsbertus Antonius;** Van Kaathoven, Hendrikus  
 Gijsbertus Adrianus  
 PA OMS Investments, Inc., USA  
 SO U.S., 12 pp.  
 CODEN: USXXAM  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6312493	B1	20011106	US 1999-414214	19991007
	JP 2003511333	T2	20030325	JP 2001-528120	20001006
	NZ 518310	A	20040227	NZ 2000-518310	20001006
	NO 2002001662	A	20020603	NO 2002-1662	20020408
PRAI	US 1999-414214	A	19991007		
	WO 2000-US27846	W	20001006		

AB The invention relates to a solid water soluble fertilizer composition containing one or more fertilizer materials and a phosphate-free, organic acid which is solid at ambient temps. The fertilizer materials include primary macro nutrients, secondary macro nutrients, micro nutrients and mixts. thereof. The organic acid has a water solubility of  $\geq 10$  g/L (at 25°) and an acidifying effect in the range of 0.5 to 1.3 g HCO<sub>3</sub><sup>-</sup>/g acid. The acidifying effect is defined as the amount of HCO<sub>3</sub><sup>-</sup> that can be transformed into H<sub>2</sub>CO<sub>3</sub> per g of acid and is calculated in accordance with the formula  $61n/Mw, acid$ , wherein Mw, acid is the mol. weight of the acid and n represents the number of dissociation consts. (i.e., pKa values) of the acid below the value

of 6.35. The acid should be present in the composition in an amount sufficient to reduce the HCO<sub>3</sub><sup>-</sup> level in water treated with the composition by 60-400 ppm, when applied to the water at a dosage of 1 g per L.

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2000:259920 HCAPLUS  
 DN 132:261687  
 TI Controlled-release coated **fertilizer**  
 IN **Tijmsma, Edze Jan; Terlingen, Johannes Gijsbertus**  
**Antonius;** Van Kaathoven, Hendrikus Gijsbertus Adrianus  
 PA OMS Investments, Inc., USA  
 SO PCT Int. Appl., 39 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000021367	A1	20000420	WO 1999-US23719	19991012
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,				

SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ,  
 BY, KG, KZ, MD, RU, TJ, TM  
 RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE,  
 DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,  
 CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

US 6139597 A 20001031 US 1998-172055 19981014

CA 2346710 AA 20000420 CA 1999-2346710 19991012

EP 1123001 A1 20010816 EP 1999-954856 19991012

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO

JP 2002527325 T2 20020827 JP 2000-575364 19991012

AU 752525 B2 20020919 AU 2000-11100 19991012

NZ 511086 A 20030429 NZ 1999-511086 19991012

ZA 2001002919 A 20020709 ZA 2001-2919 20010409

NO 2001001824 A 20010606 NO 2001-1824 20010410

PRAI US 1998-172055 A 19981014

WO 1999-US23719 W 19991012

AB A controlled release fertilizer is provided which exhibits a Gaussian nutrient release rate pattern. The fertilizer composition includes a granular nutrient core material, having a single layer coating of a water-insol., uniform, continuous polymer film thereon. such as an alkyd resin film.

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1999:761021 HCAPLUS

DN 131:336370

TI Coated controlled-release fertilizer composition

IN Tijlma, Edze Jan; Terlingen, Johannes Gijsbertus

Antonius; Aalto, Seija Helena; Van Kaathoven, Hendrikus Gijsbertus  
 Adrianus

PA OMS Investments, Inc., USA

SO U.S., 7 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5993505	A	19991130	US 1998-83734	19980522

PRAI US 1998-83734 19980522

AB A controlled-release fertilizer composition is provided, having a fertilizer in a granular core with a coating applied on the core material. The fertilizer composition is structured to enable a cumulative release of fertilizer of <10% of the total weight within 30 days after exposure to moisture. The coating consists of a single layer of a uniform, continuous polymer film, which is present on ≥90% of the granular core material. The coating is alkyd resin, acrylic polymer, etc.

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1999:723005 HCAPLUS

DN 131:310116

TI Controlled-release fertilizer granules

IN Tijlma, Edze Jan; Terlingen, Johannes Gijsbertus

Antonius; Aalto, Seija Helena; Van Kaathoven, Hendrikus Gijsbertus  
 Adrianus

PA Oms Investments, Inc., USA

SO PCT Int. Appl., 22 pp.

CODEN: PIXXD2

DT Patent  
LA English  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9957082	A1	19991111	WO 1998-US8991	19980505
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9871757	A1	19991123	AU 1998-71757	19980505
AU 723100	B2	20000817		
EP 998435	A1	20000510	EP 1998-918937	19980505
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
BR 9810672	A	20000926	BR 1998-10672	19980505
JP 2000515484	T2	20001121	JP 1999-555320	19980505
NZ 502202	A	20020828	NZ 1998-502202	19980505
RU 2194686	C2	20021220	RU 2000-102710	19980505
IL 133877	A1	20030312	IL 1998-133877	19980505
NO 20000000023	A	20000222	NO 2000-23	20000104
MX 200000249	A	20001020	MX 2000-249	20000105
PRAI WO 1998-US8991	A	19980505		

AB A controlled release fertilizer composition is provided. having a fertilizer in a granular core, with a coating applied on the core material. The fertilizer composition is structured to enable a cumulative fertilizer release of <10 % of the total fertilizer weight within 30 days after exposure to moisture. The coating consists of a single layer of a uniform, continuous polymer film, which is present on  $\geq 90$  % of the granular core material.

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 7 OF 10 USPATFULL on STN

AN 2004:91603 USPATFULL

TI Controlled release products and processes for the preparation thereof

IN **Tijmsa, Edze Jan**, Maastricht, NETHERLANDS

**Terlingen, Johannes Gijsbertus Antonius**, Landgraaf,  
NETHERLANDS

**Haas-Schrijen, Saskia**, Kerkrade, NETHERLANDS

**Vriesema, Hein Herman**, Bunde, NETHERLANDS

PA OMS Investments, Inc., Los Angeles, CA (non-U.S. corporation)

PI US 2004069033 A1 20040415

AI US 2003-684162 A1 20031010 (10)

RLI Continuation of Ser. No. US 2001-795840, filed on 28 Feb 2001, GRANTED,  
Pat. No. US 6656882

DT Utility

FS APPLICATION

LREP JONES DAY, 77 WEST WACKER, CHICAGO, IL, 60601-1692

CLMN Number of Claims: 27

ECL Exemplary Claim: 1

DRWN 2 Drawing Page(s)

LN.CNT 961

AB A controlled release product is provided having a suppressed initial release period and a predetermined longevity. The product includes a

particulate water soluble core material and a semi-permeable coating layer applied on the core material for controlling the release rate of the core material. The semi-permeable coating layer is formulated in accordance with the following equation to provide a release rate wherein initial release of core material from the product is suppressed so that less than about 15 weight percent of core material is released from the product within a 24 hour period after application of the product and wherein longevity of release, at ambient temperature, between the time of application and the time at which at least about 75 weight percent of the core material is released from the product is 60 days or less:

##EQU1##

wherein:

(i) WVTR is the water vapor transmission rate of the semi-permeable coating expressed in grams.multidot. $\mu$ m/meters.sup.2.multidot.day;

(ii)  $\phi$  is the water diffusion rate (water flux) through the semi-permeable coating expressed in grams/day;

(iii)  $\delta$  is the thickness of the coating layer expressed in  $\mu$ m;  
and

(iv)  $d$  is the average diameter of the particulate core material expressed in meters.

L10 ANSWER 8 OF 10 USPATFULL on STN  
 AN 2002:300775 USPATFULL  
 TI Controlled release products and processes for the preparation thereof  
 IN **Tijisma, Edze Jan**, Maastricht, NETHERLANDS  
**Terlingen, Johannes Gijsbertus Antonius**, Landgraaf,  
 NETHERLANDS  
**Haas-Schrijen, Saskia**, Kerkrade, NETHERLANDS  
**Vriesema, Hein Herman**, Bunde, NETHERLANDS  
 PA OMS Investments, Inc. (non-U.S. corporation)  
 PI US 2002168318 A1 20021114  
 US 6656882 B2 20031202  
 AI US 2001-795840 A1 20010228 (9)  
 DT Utility  
 FS APPLICATION  
 LREP James B. Raden, Esq., JONES, DAY, REAVIS & POGUE, 77 West Wacker Drive,  
 Chicago, IL, 60601-1692  
 CLMN Number of Claims: 21  
 ECL Exemplary Claim: 1  
 DRWN 2 Drawing Page(s)  
 LN.CNT 954  
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.  
 AB A controlled release product is provided having a suppressed initial release period and a predetermined longevity. The product includes a particulate water soluble core material and a semi-permeable coating layer applied on the core material for controlling the release rate of the core material. The semi-permeable coating layer is formulated in accordance with the following equation to provide a release rate wherein initial release of core material from the product is suppressed so that less than about 15 weight percent of core material is released from the product within a 24 hour period after application of the product and wherein longevity of release, at ambient temperature, between the time of application and the time at which at least about 75 weight percent of the core material is released from the product is 60 days or less:  
 ##EQU1##

wherein:

(i) WVTR is the water vapor transmission rate of the semi-permeable coating expressed in grams.multidot.µm/meters.sup.2.multidot.day;

(ii)  $\phi$  is the water diffusion rate (water flux) through the semi-permeable coating expressed in grams/day;

(iii)  $\delta$  is the thickness of the coating layer expressed in µm;  
and

(iv) d is the average diameter of the particulate core material expressed in meters.

L10 ANSWER 9 OF 10 USPATFULL on STN  
AN 2000:145643 USPATFULL  
TI Controlled release **fertilizer** compositions and processes for  
the preparation thereof  
IN **Tijmsma, Edze Jan**, Maastricht, Netherlands  
**Terlingen, Johannes Gijsbertus Antonius**, Landgraaf,  
Netherlands  
van Kaathoven, Hendrikus Gijsbertus Adrianus, Nieuwstadt, Netherlands  
PA OMS Investments, Inc., Wilmington, DE, United States (U.S. corporation)  
PI US 6139597 20001031  
AI US 1998-172055 19981014 (9)  
DT Utility  
FS Granted  
EXNAM Primary Examiner: Griffin, Steven P.; Assistant Examiner: Nave, Eileen  
E.  
LREP Jones, Day, Reavis & Pogue  
CLMN Number of Claims: 22  
ECL Exemplary Claim: 1  
DRWN 5 Drawing Figure(s); 2 Drawing Page(s)  
LN.CNT 610  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.  
AB A controlled release **fertilizer** is provided which exhibits a  
Gaussian nutrient release rate pattern. The **fertilizer**  
composition includes a granular nutrient core material having a single  
layer coating of a substantially water-insoluble, uniform, substantially  
continuous polymer film thereon. Processes are also provided for  
producing the **fertilizer** compositions. Methods are also  
provided for treating plants with the **fertilizer** compositions.  
  
L10 ANSWER 10 OF 10 WPIDS COPYRIGHT 2004 THOMSON DERWENT on STN  
AN 2001-273566 [28] WPIDS  
DNC C2001-082986  
TI Water soluble solid **fertilizer** composition for supplying  
precipitate free stock and feed solutions includes phosphorus free organic  
acid.  
DC C04  
IN ELTINK, M G; **TERLINGEN, J G A**; **TIJSMA, E J**; VAN  
KAATHOVEN, H G A; VAN ROIJ, P; TERLINGEN, G A  
PA (OMSI-N) OMS INVESTMENTS INC  
CYC 95  
PI WO 2001025168 A1 20010412 (200128)\* EN 53  
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ  
NL OA PT SD SE SL SZ TZ UG ZW  
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM  
DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC

LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE  
 SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

AU 2001010756 A 20010510 (200143)  
 US 6312493 B1 20011106 (200170)  
 NO 2002001662 A 20020603 (200248)  
 EP 1230195 A1 20020814 (200261) EN

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT  
 RO SE SI

JP 2003511333 W 20030325 (200330) 50  
 MX 2002003511 A1 20020901 (200370)  
 NZ 518310 A 20040227 (200418)

ADT WO 2001025168 A1 WO 2000-US27846 20001006; AU 2001010756 A AU 2001-10756  
 20001006; US 6312493 B1 US 1999-414214 19991007; NO 2002001662 A WO  
 2000-US27846 20001006, NO 2002-1662 20020408; EP 1230195 A1 EP 2000-972038  
 20001006, WO 2000-US27846 20001006; JP 2003511333 W WO 2000-US27846  
 20001006, JP 2001-528120 20001006; MX 2002003511 A1 WO 2000-US27846  
 20001006, MX 2002-3511 20020405; NZ 518310 A NZ 2000-518310 20001006, WO  
 2000-US27846 20001006

FDT AU 2001010756 A Based on WO 2001025168; EP 1230195 A1 Based on WO  
 2001025168; JP 2003511333 W Based on WO 2001025168; MX 2002003511 A1 Based  
 on WO 2001025168; NZ 518310 A Based on WO 2001025168

PRAI US 1999-414214 19991007

AB WO 200125168 A UPAB: 20010522

NOVELTY - Water soluble **fertilizer** composition comprises at  
 least one **fertilizer** and a phosphate free organic acid. The  
 composition has sufficient acidity and water solubility to give stable,  
 precipitate free stock and feed solutions, independent of the phosphorus  
 content.

DETAILED DESCRIPTION - Water soluble, solid **fertilizer**  
 composition comprises:

(a) at least one phosphorus free organic acid which is solid at  
 ambient temperature and has a water solubility of at least 10 g/l (at 25  
 deg. C), and has an acidifying effect of 0.5-1.3 g bicarbonate/g acid,  
 which is defined as the amount of HCO<sub>3</sub><sup>-</sup> that can be transformed into  
 carbonic acid/g acid which is calculated by using  $61n/Mw$ , acid, and

(b) at least one **fertilizer** material comprising primary  
 macronutrients, secondary macro nutrients and/or micronutrients.

a) which amount is calculated using the formula: The acid is  
 contained in an amount to reduce the HCO<sub>3</sub><sup>-</sup> level in water by 60-400 ppm  
 when the composition is applied to water at a dosage of 1 g/l of water as  
 measured by the formula (I).

$Mw$ , acid = molecular weight of acid;  
 $n$  = the number of dissociation constants of the acid below a pKa  
 value of 6.35.

Acproduct corresponds with the overall acidifying effect of a  
**fertilizer** product in ppm HCO<sub>3</sub><sup>-</sup> at a dosage of 1 g water soluble  
**fertilizer** per litre of water.

$61$  = molecular weight of bicarbonate or HCO<sub>3</sub><sup>-</sup> in g/mole;  
 $Mw$ , acidi = molecular weight of the acid and expressed in g/mole;  
 $f_{acidi}$  = (dimensionless) weight fraction of the acid in the  
**fertilizer** composition;

$m$  = number of acids in a product, and  
 1000 = conversion factor for converting g into mg or parts per  
 million.

An INDEPENDENT CLAIM is included for an aqueous **fertilizer**  
 solution formed by dissolving the composition in water.

USE - Used as a **fertilizer** in e.g. greenhouses, nurseries  
 and other intensive horticulture environments.

ADVANTAGE - A complete nutrient solution can be prepared with only  
 one stock solution and one proportioner. Non-chelated secondary



macronutrients and micronutrient trace elements can be used without reduction in solubility of the stock solution. Solid acidic **fertilizers** are less hazardous than liquid compositions based on phosphorus containing acids. Precipitate free solutions can be prepared using hard or alkaline water. The acidifying **fertilizer** can be formulated without influencing the phosphorus level.

**Fertilizer** compositions were added at 100 g/l to alkaline water, pH 7.8, to produce a stock solution. Observations of precipitate formation showed: e.g. with no acid, precipitate (turbidity 390 NTU); with 0.718 weight% urea phosphate, no precipitate; with 0.239 weight% malonic acid, no precipitate, showing that phosphorus free organic acids can be used to prevent precipitation, and be independent of the phosphorus content of the composition.  
Dwg.0/0

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=&gt; fil hcaplus

FILE 'HCAPLUS' ENTERED AT 13:58:09 ON 03 MAY 2004

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FILE COVERS 1907 - 3 May 2004 VOL 140 ISS 19

FILE LAST UPDATED: 2 May 2004 (20040502/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=&gt; d que 153

L1	17445	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	FERTILIZER#/OBI (L) AGR/RL
L2	16246	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	AGROCHEMICAL?/OBI
L3	1556927	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	COAT?/OBI OR FILM?/OBI OR
					MEMBRANE?/OBI
L4	607	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L1 (L) L3
L5	428	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L2 (L) L3
L6	903	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L4 OR L5
L7	863	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L6 AND (19 OR 5)/SC, SX
L8	121	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	WVTR/OBI OR WVTR/AB
L9	1	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L7 AND L8
L10	33241	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	(TIME?/OBI OR CONTROL?/OBI OR
					SUSTAIN?/OBI) (L) (RELEAS?/OBI OR DISPER?/OBI)
L11	285	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L7 AND L10
L12	1815	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	INITIAL (2A) RELEAS?
L13	6928	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	LONGEVITY OR LONGEVITIES
L14	6	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L12 AND L7
L15	2	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L13 AND L7
L19	56229	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	NUTRIENT?/OBI
L21	690	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L19 (L) RELEASE?/OBI
L22	29	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L21 AND L7
L23	372580	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	POLYMERS/CT OR POLYOLEFINS/CT
					OR POLYESTERS/CT OR POLYOXYALKYLENES/CT
L24	8	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L23 AND L22
L25	89363	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	THERMOPLAS?/OBI OR THERMOSET?/
					OBI
L26	23	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L11 AND L25
L27	35	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L9 OR L14 OR L15 OR L24 OR
					L26
L30	22	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L11 AND CELLULOSE?/OBI
L31	2666	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	CELLULOSE/OBI (L) L10
L32	17	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L31 AND L30
L35	95	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	SUPPRESS?(S) INITIAL (S)
					RELEAS?
L36	4	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L35 AND L11
L37	35	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L27 OR L36

L40 1 SEA FILE=REGISTRY ABB=ON PLU=ON IRON/CN  
 L41 1 SEA FILE=REGISTRY ABB=ON PLU=ON CALCIUM/CN  
 L42 1 SEA FILE=REGISTRY ABB=ON PLU=ON SULFUR/CN  
 L43 1 SEA FILE=REGISTRY ABB=ON PLU=ON MAGNESIUM/CN  
 L44 1 SEA FILE=REGISTRY ABB=ON PLU=ON COPPER/CN  
 L45 1 SEA FILE=REGISTRY ABB=ON PLU=ON ZINC/CN  
 L46 1 SEA FILE=REGISTRY ABB=ON PLU=ON MANGANESE/CN  
 L47 1 SEA FILE=REGISTRY ABB=ON PLU=ON BORON/CN  
 L48 1 SEA FILE=REGISTRY ABB=ON PLU=ON MOLYBDENUM/CN  
 L49 9 SEA FILE=REGISTRY ABB=ON PLU=ON (L40 OR L41 OR L42 OR L43 OR  
 L44 OR L45 OR L46 OR L47 OR L48)  
 L50 23 SEA FILE=HCAPLUS ABB=ON PLU=ON (L37 OR L32) AND (L49 OR CA  
 OR S OR MG OR FE OR CU OR ZN OR MN OR B OR MO OR CALCIUM OR  
 SULFUR OR MAGNESIUM OR IRON OR COPPER OR ZINC OR MANGANESE OR  
 BORON OR MOLYBDENUM)  
 L51 25 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 OR L9 OR L14 OR L15  
 L52 11 SEA FILE=HCAPLUS ABB=ON PLU=ON (L37 OR L32) AND (NUTRIENT?  
 OR MICRONUTRIEN?)  
 L53 29 SEA FILE=HCAPLUS ABB=ON PLU=ON L52 OR L51

=> d .ca 153 1-29

L53 ANSWER 1 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:100310 HCAPLUS

DOCUMENT NUMBER: 140:127726

TITLE: Controlled-release fertilizers produced by  
 coating **nutrients** with polyurethanes  
 containing organic additives

INVENTOR(S): Wynnyk, Nick P.; Stelmack, Eugene G.; Babiak,  
 Nicolette M.; Carstens, Leslie L.; Xing, Baozhong;  
 Geiger, Albert J.; Eastham, J. David

PATENT ASSIGNEE(S): Agrium, Can.

SOURCE: U.S. Pat. Appl. Publ., 14 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004020254	A1	20040205	US 2002-210177	20020802

PRIORITY APPLN. INFO.: US 2002-210177 20020802

AB A controlled-release fertilizer material comprises a particulate plant  
**nutrient** surrounded by a coating comprising  $\geq 1$   
 substantially homogeneous layer of a urethane-containing compound and an  
 organic  
 additive. With appropriate selection of the additive, the shape and  
 duration of the release profile can be modified to suit a wide variety of  
 applications. Thus, 1 kg of urea fertilizer was coated with 3 layers,  
 each comprised of first applying a mixture of 1.20 g C30+ wax in 4.81 g  
 Soy polyol 180 (a synthetic oleo polyol derived from soybean oil and having  
 an OH Value of 180) and 2.32 g of isocyanate. Six minutes was allowed  
 between applications of each layer, and the total coat weight was 2.5%. The  
 product had a relatively slow, linear N release curve in a water release  
 test.

IC ICM C05G005-00

NCL 071064110

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

- Section cross-reference(s): 38, 43
- IT Fats and Glyceridic oils, biological studies  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (Japan wax; production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)
- IT **Polymers, biological studies**  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (additives; production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)
- IT Fats and Glyceridic oils, biological studies  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (animal; production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)
- IT Polyurethanes, biological studies  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (castor oil-based; production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)
- IT **Agrochemical formulations**  
 (controlled-release; production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)
- IT **Fertilizers**  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (controlled-release; production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)
- IT Tar  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (pine; production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)
- IT Coating materials  
 (polymeric; production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)
- IT Coal liquids  
 Lubricants  
 Petroleum products  
 (production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)
- IT Asphalt  
 Bitumens  
 Canola oil  
 Coconut oil  
 Hydrocarbon waxes, biological studies

Linseed oil  
 Natural products  
 Paraffin oils  
 Polyurethanes, biological studies  
 Soybean oil  
 Tall oil  
 Tall oil pitch  
 Trace element **nutrients**  
 Tung oil  
 Waxes

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)

IT Coal, biological studies

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(products; production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)

IT Oils

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(synthetic; production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)

IT 57-13-6, Urea, biological studies 7440-09-7, Potassium, biological studies 7704-34-9, Sulfur, biological studies 7723-14-0, Phosphorus, biological studies 7727-37-9, Nitrogen, biological studies

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(production of controlled-release fertilizers by coating nutrients with polyurethanes containing organic additives)

L53 ANSWER 2 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:78179 HCAPLUS

DOCUMENT NUMBER: 140:127724

TITLE: Controlled-release fertilizer with improved durability during handling and its production with coating containing a particulate filler

INVENTOR(S): Wynnyk, Nick P.; Stelmack, Eugene G.; Babiak, Nicolette M.; Carstens, Leslie L.; Eastham, J. David; Xing, Baozhong

PATENT ASSIGNEE(S): Can.

SOURCE: U.S. Pat. Appl. Publ., 13 pp.  
 CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004016276 A1 20040129 US 2002-205490 20020726  
 WO 2004011395 A1 20040205 WO 2003-CA1138 20030725

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2002-205490 A 20020726

AB A controlled-release fertilizer material comprises a particulate plant **nutrient** surrounded by a protective coating comprising at least one substantially homogeneous layer of a urethane-containing compound and a filler(s). An organic additive(s) may or may not be present. Thus, urea was coated with 2 layers, applied 6 min apart, each comprised of a mixture of C30+ wax in castor oil, and isocyanate. Two further layers, each comprised of a urea dust-castor oil mixture and isocyanate, were applied in an overcoat application, and 6 min after application of the components of the 4th layer, the sample was cooled. Comparison of results from a paint shaker simulation with this fertilizer and comparative fertilizer with a urethane coat and wax layer showed that the mech. handling was improved by the function of the filler.

IC ICM C05G005-00

NCL 071064110

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

Section cross-reference(s): 38, 42

IT Polyurethanes, biological studies

RL: AGR (Agricultural use); PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(castor oil-based; production of controlled-release **fertilizer** with improved durability by using particulate filler in **coating** of)

IT Agrochemical formulations

(controlled-release; production of controlled-release fertilizer with improved durability by using particulate filler in **coating**)

IT Fertilizers

RL: AGR (Agricultural use); PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(controlled-release; production of controlled-release **fertilizer** with improved durability by using particulate filler in **coating**)

IT Fertilizers

Rocks

RL: AGR (Agricultural use); PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(dust, filler; production of controlled-release **fertilizer** with improved durability by using particulate filler in **coating**)

IT Carbon black, biological studies

Polysaccharides, biological studies

RL: AGR (Agricultural use); PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(filler; production of controlled-release **fertilizer** with

- improved durability by using particulate filler in **coating**)

IT Clays, biological studies

**Polymers, biological studies**

Zeolite-group minerals

Zeolites (synthetic), biological studies

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(fillers; production of controlled-release **fertilizer** with improved durability by using particulate filler in **coating**)
- IT Waxes

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(organic additive; production of controlled-release **fertilizer** with improved durability by using particulate filler in **coating** containing)
- IT Alcohols, biological studies

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(polyhydric, solid; production of controlled-release **fertilizer** with improved durability by using particulate filler in **coating**)
- IT Coal dust

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(production of controlled-release **fertilizer** with improved durability by using particulate filler in **coating**)
- IT Natural products

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(production of controlled-release **fertilizer** with improved durability by using particulate filler in **coating** containing)
- IT Trace element **nutrients**

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(production of controlled-release **fertilizer** with improved durability by using particulate filler in **coating** of **nutrient**)
- IT Coal, biological studies

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(products, organic additive; production of controlled-release **fertilizer** with improved durability by using particulate filler in **coating** containing)
- IT Polyurethanes, biological studies

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

(protective **coating**; production of controlled-release **fertilizer** with improved durability by using particulate filler in **coating**)
- IT Alkenes, biological studies

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)

- (Process); USES (Uses)  
 ( $\alpha$ -, long-chain, organic additive; production of controlled-release  
**fertilizer** with improved durability by using particulate filler  
 in **coating** containing)
- IT 7704-34-9, Sulfur, biological studies  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or  
 chemical process); PYP (Physical process); BIOL (Biological study); PROC  
 (Process); USES (Uses)  
 (coating and nutrient; production of controlled-  
 release **fertilizer** with improved durability by using  
 particulate filler in **coating**)
- IT 57-13-6, Urea, biological studies  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or  
 chemical process); PYP (Physical process); BIOL (Biological study); PROC  
 (Process); USES (Uses)  
 (dust filler and particulate **fertilizer**; production of  
 controlled-release **fertilizer** with improved durability by  
 using particulate filler in **coating**)
- IT 9005-25-8, Starch, biological studies 13397-24-5, Gypsum, biological  
 studies  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or  
 chemical process); PYP (Physical process); BIOL (Biological study); PROC  
 (Process); USES (Uses)  
 (fillers; production of controlled-release **fertilizer** with  
 improved durability by using particulate filler in **coating**)
- IT 101-68-8D, Diphenylmethane diisocyanate, reaction products 26471-62-5D,  
 Toluene diisocyanate, reaction products  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or  
 chemical process); PYP (Physical process); BIOL (Biological study); PROC  
 (Process); USES (Uses)  
 (production of controlled-release **fertilizer** with improved  
 durability by using particulate filler in **coating** of)
- IT 7440-09-7, Potassium, biological studies 7723-14-0, Phosphorus,  
 biological studies 7727-37-9, Nitrogen, biological studies  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or  
 chemical process); PYP (Physical process); BIOL (Biological study); PROC  
 (Process); USES (Uses)  
 (production of controlled-release **fertilizer** with  
 improved durability by using particulate filler in **coating** of  
 nutrient)

L53 ANSWER 3 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:214647 HCAPLUS  
 DOCUMENT NUMBER: 138:233417  
 TITLE: Pesticide-containing coated fertilizer granules and  
 their manufacture  
 INVENTOR(S): Okada, Shoji  
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003081705	A2	20030319	JP 2001-276181	20010912
PRIORITY APPLN. INFO.:			JP 2001-276181	20010912

AB The granules comprise (a) agrochem. pesticide compds. and (b)



- oxyethylene compds. (d.p.  $\geq 10$ , melting at 35-100°) supported on fertilizer granules coated with thermosetting resins. The granules show controlled **initial release** of pesticides. (E)-(S)-1-(4-chlorophenyl)-4,4-dimethyl-2-(1H-1,2,4-triazol-1-yl)pent-1-en-3-ol was dissolved into PEG 4000N, mixed with N-P2O5-K2O fertilizer granules, and coated with a composition comprising Sumidur 44V10 (polymeric MDI), Sumiphen TM (polyether polyol), Sumiphen 1600U (polyether polyol), and an amine catalyst to give coated granules, which showed 93.0% stability of the active ingredient after storage at 40° for 3 days.
- IC ICM A01N025-12  
ICS A01N025-26; A01N037-34; A01N043-653; B01J002-00; C05G003-00; C05G003-02
- CC 5-3 (Agrochemical Bioregulators)  
Section cross-reference(s): 19
- IT **Agrochemical** formulations  
(coated fertilizer granules containing pesticides and oxyethylene compds.)
- IT Polyoxyalkylenes, biological studies  
RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
(coated fertilizer granules containing pesticides and oxyethylene compds.)
- IT **Fertilizers**  
RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
(nitrogen-phosphorus-potassium; **coated fertilizer** granules containing pesticides and oxyethylene compds.)
- IT Polyurethanes, biological studies  
RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
(polyoxyalkylene-, **coatings**; **coated fertilizer** granules containing pesticides and oxyethylene compds.)
- IT 9002-92-0, Polyoxyethylene lauryl ether  
RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
(Pegmol ST 15; **coated fertilizer** granules containing pesticides and oxyethylene compds.)
- IT 25322-68-3, Polyethylene glycol  
RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
(**coated fertilizer** granules containing pesticides and oxyethylene compds.)
- IT 198131-56-5  
RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
(**coating**; **coated fertilizer** granules containing pesticides and oxyethylene compds.)
- IT 1314-56-3, Phosphorus oxide, biological studies 7727-37-9, Nitrogen, biological studies 12136-45-7, Potassium oxide, biological studies  
RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
(**fertilizer**; **coated fertilizer** granules containing pesticides and oxyethylene compds.)
- IT 83657-17-4 139920-32-4  
RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
(pesticide; **coated fertilizer** granules containing pesticides and oxyethylene compds.)

L53 ANSWER 4 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:928467 HCAPLUS

DOCUMENT NUMBER: 138:89234

TITLE: **Controlled-release** NPK fertilizer

encapsulated by polymeric membranes

AUTHOR(S): Jarosiewicz, Anna; Tomaszewska, Maria

CORPORATE SOURCE: Institute of Chemical and Environment Engineering,  
Technical University of Szczecin, Szczecin, 70-322,  
Pol.

SOURCE: Journal of Agricultural and Food Chemistry (2003),  
51(2), 413-417  
CODEN: JAFCAU; ISSN: 0021-8561

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The com. granular fertilizer NPK6-20-30 was coated using polysulfone (PSF), polyacrylonitrile (PAN), and cellulose acetate (CA). The coatings were formed from the polymer solns. by the phase inversion technique. Measurements of the thickness and porosity of the prepared coatings and a microphotog. observation of the coatings were performed. The phys. properties of the coatings influence the release rate of macronutrients which are present in the core of the coated fertilizer. In the case of PAN coating with 60.45% porosity, prepared from a 16% polymer solution, 100% of NH<sub>4</sub><sup>+</sup> and P<sub>2</sub>O<sub>5</sub> was released after 4 h of test and 99.7% of K<sup>+</sup> after 5 h of test, whereas in the case of coating with 48.8% porosity, 31.8% of NH<sub>4</sub><sup>+</sup>, 16.7% of P<sub>2</sub>O<sub>5</sub>, and 11.6% of K<sup>+</sup> was released after 5 h. In all expts., different selectivities of the coatings in terms of the release of components were observed. The release of potassium through the coatings made of PSF and PAN was the slowest. The same tendency was observed for the release of nitrogen through a coating of CA. The release of fertilizer active components was the slowest in the case of PSF. The lowest porosity coating was prepared from the 18% PSF solution

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

ST fertilizer NPK **controlled release** encapsulation  
polymer membrane; polysulfone polyacrylonitrile **cellulose**  
acetate NPK fertilizer capsule

IT Membranes, nonbiological  
(**controlled-release** NPK fertilizer encapsulated by  
polymeric membranes)

IT Polysulfones, biological studies  
RL: **AGR (Agricultural use)**; MOA (Modifier or additive use); TEM  
(Technical or engineered material use); BIOL (Biological study); USES  
(Uses)  
(**controlled-release** NPK fertilizer  
encapsulated by polymeric **membranes**)

IT **Agrochemical** formulations  
(**controlled-release; controlled-**  
**release** NPK fertilizer encapsulated by polymeric  
**membranes**)

IT **Fertilizers**  
RL: **AGR (Agricultural use)**; BSU (Biological study,  
unclassified); PNU (Preparation, unclassified); BIOL (Biological study);  
PREP (Preparation); USES (Uses)  
(nitrogen-phosphorus-potassium; **controlled-release**  
NPK **fertilizer** encapsulated by polymeric **membranes**)

IT **Fertilizers**  
RL: **AGR (Agricultural use)**; BSU (Biological study,  
unclassified); PNU (Preparation, unclassified); BIOL (Biological study);  
PREP (Preparation); USES (Uses)  
(**slow-release; controlled-release** NPK  
**fertilizer** encapsulated by polymeric **membranes**)

IT 9004-35-7, **Cellulose** acetate 25014-41-9, Polyacrylonitrile  
RL: **AGR (Agricultural use)**; MOA (Modifier or additive use); TEM  
(Technical or engineered material use); BIOL (Biological study); USES  
(Uses)  
(**controlled-release** NPK **fertilizer**  
encapsulated by polymeric **membranes**)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 5 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:675971 HCAPLUS

DOCUMENT NUMBER: 137:216434

TITLE: **Coated controlled-release**  
formulation for **agrochemicals**INVENTOR(S): Tijsma, Edze Jan; Terlingen, Johannes Gijsbertus  
Antonius; Haas-Schrijen, Saskia; Vriesema, Hein Herman

PATENT ASSIGNEE(S): Oms Investments, Inc., USA

SOURCE: PCT Int. Appl., 30 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002068363	A2	20020906	WO 2002-US5875	20020228
WO 2002068363	A3	20030109		
WO 2002068363	B1	20031120		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
US 2002168318	A1	20021114	US 2001-795840	20010228
US 6656882	B2	20031202		
EP 1370135	A1	20031217	EP 2002-794943	20020228
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			
US 2004069033	A1	20040415	US 2003-684162	20031010
PRIORITY APPLN. INFO.:			US 2001-795840	A 20010228
			WO 2002-US5875	W 20020228

AB A controlled **release** product is provided having a **suppressed initial release** period and a predetd. **longevity**. The product includes a particulate water-soluble core material and a semi-permeable coating layer applied on the core material for controlling the release rate of the core material. The semi-permeable coating layer is formulated in accordance with an equation to provide a **release** rate wherein **initial release** of core material from the product is **suppressed** so that <15 weight % of core material is **released** from the product within a 24 h period after application of the product and wherein **longevity** of **release**, at ambient temperature, between the time of application and the time at which  $\geq 75$  weight % of the core material is **released** from the product is  $\leq 60$  days. **WVTR** is the water vapor transmission rate of the semipermeable coating expressed in  $\text{g} \cdot \mu\text{m} / \text{m}^2 \cdot \text{day}$ .  $\text{WVTR} = \phi \cdot \delta / \pi d^2$ , where  $\phi$  is the water diffusion rate (water flux) through the semipermeable coating, expressed in  $\text{g} / \text{day}$ ;  $\delta$  is the thickness of the coating layer expressed in  $\mu\text{m}$ ; and  $d$  is the average diameter of the particulate core material expressed in  $\text{m}$ .

IC ICM C05G

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

Section cross-reference(s): 5

ST **controlled release** agrochem formulation

IT **Agrochemical** formulations  
 Fungicides  
 Herbicides  
 Insecticides  
 (coated controlled-release formulation  
 for agrochems.)

IT **Fertilizers**  
 Hormones, plant  
 Pheromones, animal  
 RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
 (coated controlled-release formulation  
 for agrochems.)

IT **Fertilizers**  
 RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
 (nitrogen-phosphorus-potassium; **coated controlled-**  
**release** formulation for agrochems.)

IT **Fertilizers**  
 RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
 (urea; **coated controlled-release**  
 formulation for agrochems.)

IT 7439-89-6, Iron, biological studies 7439-95-4,  
 Magnesium, biological studies 7439-96-5,  
 Manganese, biological studies 7439-98-7,  
 Molybdenum, biological studies 7440-42-8, Boron  
 , biological studies 7440-48-4, Cobalt, biological studies  
 7440-66-6, Zinc, biological studies 7440-70-2,  
 Calcium, biological studies 7704-34-9, Sulfur,  
 biological studies  
 RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
 (coated controlled-release  
 agrochem. formulation of)

L53 ANSWER 6 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:487306 HCAPLUS

DOCUMENT NUMBER: 137:42990

TITLE: Preparation of **sustained-release**  
 agricultural chemicals

INVENTOR(S): Park, Hae-Jun; Lee, In-Kuk; Shin, Hyun-Suk; Rho,  
 Mi-Young; Kim, Nam-Kyu

PATENT ASSIGNEE(S): S. Korea

SOURCE: PCT Int. Appl., 39 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002049430	A1	20020627	WO 2001-KR2194	20011218
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

AU 2002022759      A5      20020701      AU 2002-22759      20011218  
 PRIORITY APPLN. INFO.:      KR 2000-78670      A      20001219  
                                  KR 2001-32100      A      20010608  
                                  KR 2001-78948      A      20011213  
                                  WO 2001-KR2194      W      20011218

AB    A process for preparing sustained-release agricultural chems. containing phosphorous acid salt comprises: (a) adding an effective component of agricultural chems. in a ratio of 1-100 g per 100 mL of solvent, dissolving and collecting a solution containing said effective component; (b) adding a porous carrier in a ratio of 0.5-2.0 kg per 100 mL of said solution containing said effective component of said agricultural pesticide, mixing homogeneously, drying to form an adsorption carrier containing said effective component; and (c) adding a suspension containing 0.5-15 g of polysaccharides obtained from microorganism per 1 kg of said adsorption carrier containing said effective component of said agricultural chems. dried above.

IC    ICM A01N025-08  
 CC    5-4 (Agrochemical Bioregulators)  
 ST    agrochem **sustained release** prepn; pesticide  
       **sustained release** prepn  
 IT    Charcoal  
       RL: MOA (Modifier or additive use); USES (Uses)  
           (activated; porous carrier in **sustained-release** agrochem. compns.)

IT    Mastics  
       (coating in **sustained-release** agrochem. compns.)

IT    Pesticides  
       (controlled-release; preparation of)

IT    Polysaccharides, uses  
       RL: MOA (Modifier or additive use); USES (Uses)  
           (microorganism-derived; coating in **sustained-release** agrochem. compns.)

IT    Ceramics  
       (porous carrier in **sustained-release** agrochem. compns.)

IT    Diatomite  
       Zeolite-group minerals  
       RL: MOA (Modifier or additive use); USES (Uses)  
           (porous carrier in **sustained-release** agrochem. compns.)

IT    Agrochemical formulations  
       (**sustained-release**; preparation of)

IT    9004-34-6, Cellulose, uses      9013-95-0, Levan      9057-02-7,  
   Pullulan      11138-66-2, Xanthan gum      54724-00-4, Curdlan      74749-76-1,  
   Zooglan      185915-34-8, Pestan  
       RL: MOA (Modifier or additive use); USES (Uses)  
           (coating in **sustained-release** agrochem. compns.)

IT    1318-00-9, Vermiculite      12427-27-9, Pearlite  
       RL: MOA (Modifier or additive use); USES (Uses)  
           (porous carrier in **sustained-release** agrochem. compns.)

IT    52-68-6, DEP      55-38-9, MPP      60-51-5, Dimethoate      63-25-2, NAC  
   69-53-4, Ampicillin      69-72-7, Salicylic acid, biological studies  
   94-75-7, 2,4-D, biological studies      94-81-5, MCPB      99-30-9, CNA  
   114-26-1, PHC      119-12-0, Pyridaphenthion      121-75-5, Malathion  
   122-14-5, MEP      122-34-9, Simazine      133-06-2, Captan      148-79-8,  
   Thiabendazole      298-03-3      333-41-5, Diazinon      541-48-0,

$\beta$ -Aminobutyric acid 732-11-6, PMP 834-12-8, Ametryn 1129-41-5,  
 MTMC 1836-77-7, CNP 1912-24-9, Atrazine 2104-64-5, EPN 2212-67-1,  
 Molinate 2274-67-1, Dimethylvinphos 2275-23-2, Vamidothion  
 2540-82-1, Formothion 2597-03-7, PAP 2631-40-5, MIPC 2655-14-3, XMC  
 2797-51-5, ACN 3766-81-2, BPMC 5598-13-0 6894-38-8, Jasmonic acid  
 6923-22-4, Monocrotophos 6980-18-3, Kasugamycin 7292-16-2, Propaphos  
 10004-44-1, Hydroxyisoxazole 10380-28-6, Oxine-**copper**  
 10443-70-6, MCPBethyl 11113-80-7, Polyoxin 13356-08-6, Fenbutatin  
 oxide 13598-36-2D, Phosphorous acid, salt 14698-29-4, Oxolinic acid  
 15263-53-3, Cartap 17606-31-4, Bensultap 18181-80-1, Phenisobromolate  
 18854-01-8, Isoxathion 19666-30-9, Oxadiazon 22248-79-9, CVMP  
 22936-75-0, Dimethametryn 23184-66-9, Butachlor 24151-93-7, Piperophos  
 25057-89-0, Bentazon 26087-47-8, IBP 27355-22-2, Fthalide  
 28249-77-6, Benthicarb 29232-93-7, Pyrimiphosmethyl 30560-19-1,  
 Acephate 31895-21-3, Thiocyclam 32861-85-1, Chlormethoxynil  
 36335-67-8, Butamifos 36734-19-7, Iprodione 41814-78-2, Tricyclazole  
 42576-02-3, Bifenox 42609-52-9, Dymron 50512-35-1, Isoprothiolane  
 50642-14-3, Validamycin 51218-49-6, Pretilachlor 52570-16-8,  
 Naproanilide 55179-31-2, Bitertanol 55285-14-8, Carbosulfan  
 55814-41-0, Mepronil 57369-32-1, Pyroquilon 57520-17-9, Iminoctadine  
 Triacetate 57837-19-1, Metalaxyl 58011-68-0, >, Pyrazolate  
 58798-67-7, Blastocidin 59669-26-0, Thiodicarb 60168-88-9, Fenarimol  
 61432-55-1, Dimepiperate 62865-36-5, Diclomezine 63935-38-6,  
 Cycloprothrin 65907-30-4, Furathiocarb 66952-49-6, Methasulfocarb  
 68505-69-1, Benfuresate 69327-76-0, Buprofezin 70630-17-0, Metalaxyl-M  
 71561-11-0, >, Pyrazoxyfen 73250-68-7, Mefenacet 74115-24-5,  
 Clofentezine 74712-19-9, Bromobutide 76280-91-6, Tecloftalam  
 76578-14-8, Quizalofop-ethyl 76608-88-3, Triapenthenol 76738-62-0,  
 Paclobutrazol 79540-50-4, Etobenzanid 80844-07-1, Ethofenprox  
 82211-24-3, Inabenfide 82560-54-1, Benfuracarb 82657-04-3, Bifenthrin  
 82692-44-2, Benzofenap 83055-99-6, Bensulfuronmethyl 83657-22-1,  
 Uniconazole 84087-01-4, Quinclorac 85785-20-2, Esprocarb 87818-31-3,  
 Cinmethylin 88678-67-5, Pyributicarb 89269-64-7, Ferimzone  
 93697-74-6, Pyrazosulfuronethyl 94593-91-6, Cinosulfuron 96489-71-3,  
 Pyridaben 96491-05-3, Thenylchlor 97886-45-8, Dithiopyr 99485-76-4,  
 Cumyluron 104030-54-8, Carpropamid 105024-66-6, Silafluofen  
 110956-75-7, Pentoxazone 112410-23-8, Tebufenozide 115852-48-7,  
 NNF-9425 120068-37-3, Fipronil 120162-55-2, Azimsulfuron  
 122008-85-9, Cyhalofop-butyl 122548-33-8, Imazosulfuron 125306-83-4,  
 Cafenstrole 130000-40-7, Thifluzamide 131860-33-8, Azoxystrobin  
 133408-50-1, Metominostrobin 135158-54-2, Acibenzolar-S-methyl  
 136849-15-5, Cyclosulfamuron 138261-41-3, Imidacloprid 147411-69-6,  
 Pyriminobacmethyl 150824-47-8, Nitenpyram  
 RL: AGR (Agricultural use); BSU (Biological study, unclassified); BIOL  
 (Biological study); USES (Uses)

(sustained-release compns. containing)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 7 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:456105 HCAPLUS

DOCUMENT NUMBER: 138:303341

TITLE: Evaluation of controlled-release compound fertilizers  
in soil

AUTHOR(S): Hanafi, M. M.; Eltaib, S. M.; Ahmad, M. B.; Omar, S.  
R. Syed

CORPORATE SOURCE: Department of Land Management, Faculty of Agriculture,  
Universiti Putra Malaysia, Serdang, 43400-UPM, Malay.

SOURCE: Communications in Soil Science and Plant Analysis  
(2002), 33(7 & 8), 1139-1156

CODEN: CSOSA2; ISSN: 0010-3624

PUBLISHER:

Marcel Dekker, Inc.

DOCUMENT TYPE:

Journal

LANGUAGE:

English

AB Evaluation of compound controlled-release fertilizer (CRF) in the soil is essential in order to establish an appropriate soil management and fertilizer application technique. A compound fertilizer containing about 15% nitrogen (N), 2% phosphorus (P), 16% potassium (K), 4% **calcium** (Ca), 1% **magnesium** (Mg), and 1% **copper** (Cu) was prepared and subsequently coated with natural rubber (NR), polyvinyl chloride (PVC), polyacrylamide (PA), and polylactic acid (PLA). Evaluations of the compound CRF were conducted in the laboratory and in the field using an open leaching technique. The soil column was prepared using an acid Bungor soil (Typic Paleudult) packed in PVC tube for the laboratory and an undisturbed soil column for the field studies. A 25-g sample of each coated fertilizer was mixed with the soil in the top (0-60 mm) of the soil column. **Nutrients** released by the compound CRF in the appropriate soil column were monitored in the leachate for 30 days (about 18.0 pore volume (PV) of leachate), while in the field they were exposed to the atmospheric for about 90 days. The uncoated compound fertilizer gave significantly ( $P \leq 0.05$ ) higher amount of **nutrient** loss compared to the coated fertilizers during leaching in the laboratory. The

values

ranged from 3023.0 **mg** N (80.3% of that added) to 1.4 **mg** Cu (6.2% of that added). Among the coated fertilizers, there were wide variations in the amts. and types of **nutrient** losses between different coating materials. By taking the summation of **nutrients** in the leachate, the effectiveness of the uncoated and coated compound fertilizers decreased in the order: PVC  $\approx$  NR > PLA > PA >>> uncoated. Depth distribution of **nutrients** and their amts. remaining in the soil column of the resp. treatments showed no significant difference between leaching in the laboratory and that in the

field.

Thus, the effectiveness of the compound uncoated and coated fertilizers was similar to that measured in the laboratory using a fraction collector. Therefore, an assessment of the CRF could be done precisely and accurately in the laboratory using an open leaching technique. However, the effectiveness of CRF needs to be validated in the presence of a growing plant.

CC 19-3 (Fertilizers, Soils, and Plant Nutrition)

ST controlled **release** fertilizer **nutrient release** soil; coating fertilizer **nutrient release** soil

IT Soils

(Ultisols; **nutrient release** from controlled-**release** compound fertilizers in soil and leaching in relation to coating material)

IT **Agrochemical** formulations

(controlled-**release**; **nutrient release** from controlled-**release** compound fertilizers in soil and leaching in relation to **coating** material)

IT **Fertilizers**

RL: **AGR** (Agricultural use); GPR (Geological or astronomical process); PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses) (controlled-**release**; **nutrient release** from controlled-**release** compound **fertilizers** in soil and leaching in relation to **coating** material)

IT Coating materials

(**nutrient release** from controlled-**release** compound fertilizers in soil and leaching in relation to coating material)

- IT Natural rubber, biological studies  
**Polymers, biological studies**  
 RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
 (nutrient release from controlled-release  
 compound fertilizers in soil and leaching in relation to  
 coating material)
- IT Mineral elements, biological studies  
 RL: **AGR (Agricultural use)**; GPR (Geological or astronomical  
 process); PEP (Physical, engineering or chemical process); PYP (Physical  
 process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (nutrient release from controlled-release  
 compound fertilizers in soil and leaching in relation to  
 coating material)
- IT Environmental transport  
 (of nutrients released from controlled-  
 release compound fertilizers in soil in relation to coating  
 material)
- IT 9002-86-2, Polyvinyl chloride 9003-05-8, Polyacrylamide 26023-30-3,  
 Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] 26100-51-6, Polylactic acid  
 RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
 (nutrient release from controlled-release  
 compound fertilizers in soil and leaching in relation to  
 coating material)
- IT 7439-95-4, Magnesium, biological studies 7440-09-7,  
 Potassium, biological studies 7440-50-8, Copper,  
 biological studies 7440-70-2, Calcium, biological  
 studies 7723-14-0, Phosphorus, biological studies 7727-37-9, Nitrogen,  
 biological studies  
 RL: **AGR (Agricultural use)**; GPR (Geological or astronomical  
 process); PEP (Physical, engineering or chemical process); PYP (Physical  
 process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (nutrient release from controlled-release  
 compound fertilizers in soil and leaching in relation to  
 coating material)

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 8 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:421655 HCAPLUS  
 DOCUMENT NUMBER: 137:1942  
 TITLE: Coated bioactive granules and their manufacture  
 INVENTOR(S): Tachibana, Masami; Yoshida, Shigemitsu; Senzu,  
 Yoshihiro  
 PATENT ASSIGNEE(S): Chisso Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002161002	A2	20020604	JP 2000-357574	20001124
PRIORITY APPLN. INFO.:			JP 2000-357574	20001124

AB Claimed are granules of bioactive substances such as fertilizers or  
 agrochems. coated with coating materials which contain polymers having  
 Durometer D hardness 54-71. The coated granules are manufactured by coating  
 uncoated granules with a coating composition having viscosity 0.5-40  
 mPa.cntdot.s. The coated granules show proper release property



- even when the coating is given excessive phys. impact or the coating is made thinner. Urea-containing tertiary granules (1.0-4.0 mm, preparation given)
- were spray-coated with a composition containing Cl<sub>2</sub>C:CCl<sub>2</sub>, Petrothene 173R (low-d.
- polyethylene; Durometer D hardness 56, melt flow rate 0.3 g/10 min, tensile breaking strength 22 MPa, Vicat softening temperature 100°), corn starch, and talc. Dissoln. rate of the coated granules after 3 days was slightly increased from 0.3% to 0.6% when phys. impact was given by drop test.
- IC ICM A01N025-12  
ICS A01N025-10; B01J002-00; C05G003-00
- CC 5-3 (Agrochemical Bioregulators)  
Section cross-reference(s): 38
- ST **agrochem granule coating** polymer durometer D hardness control; **thermoplastic polymer coating** **agrochem granule**; low density polyethylene **coating** **agrochem granule**
- IT Pesticide formulations  
(**coating** of bioactive granules such as **agrochems.** by composition containing polymers having controlled durometer D hardness)
- IT Linear low density polyethylenes  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(**coating** of bioactive granules such as **agrochems.** by composition containing polymers having controlled durometer D hardness)
- IT **Agrochemical formulations**  
(**controlled-release; coating** of bioactive granules such as **agrochems.** by composition containing polymers having **controlled** durometer D hardness)
- IT **Fertilizers**  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(**controlled-release; coating** of bioactive granules such as **agrochems.** by composition containing polymers having **controlled** durometer D hardness)
- IT Plastics, biological studies  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(**thermoplastics; coating** of bioactive granules such as **agrochems.** by composition containing polymers having controlled durometer D hardness)
- IT 74-85-1D, Ethene, polymers with  $\alpha$ -olefins  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(LLDPE; **coating** of bioactive granules such as **agrochems.** by composition containing polymers having controlled durometer D hardness)
- IT 9002-88-4, Polyethylene  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(Nipolonhard 400, Petrothene LW 04, Petrothene 173R; **coating** of bioactive granules such as **agrochems.** by composition containing polymers having controlled durometer D hardness)
- IT 9002-85-1, Poly(vinylidene chloride) 9003-07-0, Polypropylene 9010-79-1, Ethylene-propylene copolymer 9019-29-8, Ethylene-butene copolymer 9019-30-1, Propylene-butene copolymer 25052-62-4, Ethylene-carbon monoxide copolymer 25213-02-9, Ethylene-hexene copolymer 431976-64-6, Nipolon Z 7P02A  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(**coating** of bioactive granules such as **agrochems.** by composition containing polymers having controlled durometer D hardness)

DOCUMENT NUMBER: 135:60763  
 TITLE: **Controlled-release** fertilizers  
 coated with film containing silane coupling agent  
 INVENTOR(S): Tada, Keishi; Ono, Akimasa  
 PATENT ASSIGNEE(S): Asahi Chemical Industry Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001181079	A2	20010703	JP 1999-362043	19991221

PRIORITY APPLN. INFO.: JP 1999-362043 19991221

AB Granular fertilizers are coated with a film composition containing coupling agent, filler and a resin component to obtain controlled-release fertilizers with high productivity without the need for special equipment. The superior phys. strength of the coating leads to storage stability. Thus, 0.5 part vinyltrimethoxysilane was added to a dispersion containing talc 50, starch 3, and tetrachloroethylene 900 parts in a jet apparatus and agitated for 30 at 25°, and 1000 parts of tetrachloroethylene were added to polyethylene 30 and ethylene-vinyl acetate copolymer 17 parts and heated to the b.p. Urea granules were coated with a film composition prepared by mixing these 2 liqs. so that the film was 10.7% of the total weight, then mixed with silica dust (0.8 part, 60 rpm, 15 min). The product had a N leaching rate of 8% at 30 days, and it took 106 days to reach 80% N release, whereas granules manufactured in the same way except without addition of vinyltrimethoxysilane had a N leaching rate of 21% at 30 days.

IC ICM C05G003-00

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
 Section cross-reference(s): 42

IT Coating materials  
 (controlled-release fertilizers coated with film containing silane coupling agent)

IT **Fertilizers**  
 RL: AGR (Agricultural use); PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (controlled-release; granular fertilizers coated with film containing silane coupling agent)

IT **Agrochemical formulations**  
 (controlled-release; granular fertilizers coated with film containing silane coupling agent as)

IT Coupling agents  
 (silane; controlled-release fertilizers coated with film containing)

IT Plastics, biological studies  
 RL: AGR (Agricultural use); TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)  
 (thermoplastics; controlled-release fertilizers coated with film containing silane coupling agent)

IT 2768-02-7, Vinyltrimethoxysilane  
 RL: AGR (Agricultural use); MOA (Modifier or additive use); BIOL (Biological study); USES (Uses)  
 (controlled-release fertilizers coated with film containing)

- IT 7440-09-7, Potassium, biological studies 7723-14-0, Phosphorus, biological studies  
 RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
 (controlled-release fertilizers  
 coated with film containing silane coupling agent)
- IT 78-08-0, Vinyltriethoxysilane 2530-83-8,  $\gamma$ -Glycidoxypyrroltrimethoxysilane  
 RL: **AGR (Agricultural use)**; MOA (Modifier or additive use); BIOL (Biological study); USES (Uses)  
 (controlled-release fertilizers  
 coated with film containing silane coupling agent)
- IT 9002-88-4, Polyethylene 24937-78-8, ethylene-vinyl acetate copolymer  
 RL: **AGR (Agricultural use)**; TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)  
 (controlled-release fertilizers  
 coated with film containing silane coupling agent)
- IT 7727-37-9, Nitrogen, biological studies  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (fertilizers coated with film containing silane coupling agent and release rate of)
- IT 57-13-6, Urea, biological studies  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (granules; controlled-release fertilizers  
 coated with film containing silane coupling agent)

L53 ANSWER 10 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:464881 HCAPLUS  
 DOCUMENT NUMBER: 133:70210  
 TITLE: **Controlled-release agrochemical compositions and their manufacture**  
 INVENTOR(S): Kurokawa, Yoshinobu; Baba, Masanori  
 PATENT ASSIGNEE(S): Nissan Chemical Industries, Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000191407	A2	20000711	JP 1998-369643	19981225
PRIORITY APPLN. INFO.:			JP 1998-369643	19981225

AB The comps. comprise resin-coated agrochem. granules covered with mixts. of solid active ingredients and inert fine powders using adhesives comprising water-soluble resins and/or water-insol. thermoplastic resins. Coated urea fertilizer granules were treated with Mowinyl DC [poly(vinyl acetate) emulsion] and a mixture comprising fipronil, Vanillex N (Na ligninsulfonate), and Microcell E (Ca silicate) to give a composition showing 10.1% release of fipronil in H<sub>2</sub>O after 1 h.

IC ICM A01N025-26  
 ICS A01N025-10; A01N025-24; A01N025-34; C05G003-00

CC 5-4 (Agrochemical Bioregulators)  
 Section cross-reference(s): 19

ST **controlled release** insecticide fertilizer compn; urea fertilizer coating fipronil resin adhesive; polyvinyl acetate adhesive insecticide coating fertilizer

IT Insecticides

- (controlled-release agrochem. compns.  
containing agrochem. cores and active ingredient coatings  
)
- IT Agrochemical formulations  
(controlled-release; controlled-release agrochem. compns. containing agrochem. cores and active ingredient coatings)
- IT Plastics, biological studies  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(thermoplastics, water-insol., adhesives; controlled-release agrochem. compns. containing agrochem. cores and active ingredient coatings)
- IT Fertilizers  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(urea, cores; controlled-release agrochem. compns. containing agrochem. cores and active ingredient coatings)
- IT 1344-95-2, Calcium silicate  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(Micro-Cel E, powder in coating; controlled-release agrochem. compns. containing agrochem. cores and active ingredient coatings)
- IT 9003-20-7, Mowinyl DC 9003-39-8, Poly(vinylpyrrolidone)  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(adhesive; controlled-release agrochem. compns. containing agrochem. cores and active ingredient coatings)
- IT 120068-37-3, Fipronil  
RL: AGR (Agricultural use); BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
(controlled-release agrochem. compns. containing agrochem. cores and active ingredient coatings  
)
- IT 57-13-6, Urea, biological studies  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(core; controlled-release agrochem. compns. containing agrochem. cores and active ingredient coatings)

L53 ANSWER 11 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:452468 HCAPLUS

DOCUMENT NUMBER: 133:54843

TITLE: Controlled-release double-coated agrochemical granules

INVENTOR(S): Nishi, Yasushi; Hanaki, Katsuhiko

PATENT ASSIGNEE(S): Nippon Bayer Agrochem K. K., Japan

SOURCE: Jpn. Kokai Tokyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000186004	A2	20000704	JP 1998-365046	19981222
PRIORITY APPLN. INFO.:			JP 1998-365046	19981222

AB The controlled-release granules are manufactured by coating core particles of mineral materials with agrochemicals. (A) using a mixed solution of an poly(vinyl

acetate) emulsion a surfactant, and further coating the coated particles with a composition containing agrochemicals. (B), bentonite, white carbon, and a binder using a mixed solution of H<sub>2</sub>O, an anionic polycarboxylic acid surfactant, and the surfactant used in the 1st coating. The agrochemicals. (A) may have water solubility  $\leq 100$  ppm at 20° and the agrochemicals. (B) have water solubility  $\leq 50$  ppm at 20°. The coating design suppresses rapid release of agrochemicals. (A) with higher water solubility and promotes release of agrochemicals. (B) with less water solubility Silica sand particles were spray-coated with an aqueous solution containing Na dioctyl sulfosuccinate (I) and poly(vinyl acetate), mixed with benfuracarb, dried, spray-coated with a mixture of Toxanon GR 31A (polycarboxylic acid), I, and H<sub>2</sub>O, and then mixed with a composition containing carpropamid, bentonite, white carbon, pumice powder, and sucrose to give double-coated granules. Dissoln. of agrochem. components from the granules were also examined

- IC ICM A01N025-26
- ICS A01N025-08; A01N025-10; A01N025-12; A01N025-30
- CC 5-2 (Agrochemical Bioregulators)
- ST **agrochem** granule double **coating** multiple component  
**controlled release**; benfuracarb carpropamid double  
**coated controlled release** granule
- IT Clays, biological studies  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(activated, core particles; **controlled-release**  
**double-coated agrochem.** granules containing two  
**agrochemicals.** in the different layers)
- IT Surfactants  
(anionic, polycarboxylic acids; **controlled-release**  
**double-coated agrochem.** granules containing two  
**agrochemicals.** in the different layers)
- IT Carbohydrates, biological studies  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(binders; **controlled-release double-coated**  
**agrochem.** granules containing two **agrochemicals.** in the  
different layers)
- IT Surfactants  
(**controlled-release double-coated**  
**agrochem.** granules containing two **agrochemicals.** in the  
different layers)
- IT **Agrochemical** formulations  
Insecticides  
(**controlled-release; controlled-**  
**release double-coated agrochem.** granules  
containing two **agrochemicals.** in the different layers)
- IT Bentonite, biological studies  
Pumice  
Sand  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(core particles; **controlled-release double-**  
**coated agrochem.** granules containing two  
**agrochemicals.** in the different layers)
- IT Carboxylic acids, biological studies  
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
(polycarboxylic, anionic surfactants; **controlled-**  
**release double-coated agrochem.** granules  
containing two **agrochemicals.** in the different layers)
- IT 50-99-7, Glucose, biological studies 57-48-7, Fructose, biological  
studies 57-50-1, biological studies 63-42-3 69-65-8, Mannitol  
9004-32-4, Carboxymethyl **cellulose** 9004-53-9, Dextrin  
9004-64-2, Hydroxypropyl **cellulose**

RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (binder; **controlled-release** double-coated  
**agrochem.** granules containing two **agrochems.** in the  
 different layers)

IT 98-11-3D, Benzenesulfonic acid, alkyl derivs., biological studies  
 577-11-7, Sodium dioctyl sulfosuccinate 5138-18-1D, Sulfosuccinic acid,  
 dialkyl esters 9003-04-7, Toxanon GR 31A 51732-88-8 82560-54-1,  
 Benfuracarb 83055-99-6, Bensulfuron-methyl 104030-54-8, Carpropamid  
 104552-09-2, Polyoxyethylene styrylphenyl ether 106392-12-5D,  
 Polyoxyethylene-polyoxypropylene block copolymer, alkylphenyl ethers,  
 sulfates 136849-15-5, Cyclosulfamuron 158237-07-1, Fentrazamide  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)

(**controlled-release** double-coated  
**agrochem.** granules containing two **agrochems.** in the  
 different layers)

IT 471-34-1, **Calcium** carbonate, biological studies 7631-86-9,  
 Silica, biological studies  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (core particles; **controlled-release** double-  
**coated agrochem.** granules containing two  
**agrochems.** in the different layers)

IT 9003-20-7, Poly(vinyl acetate)  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (emulsion, binder; **controlled-release** double-  
**coated agrochem.** granules containing two  
**agrochems.** in the different layers)

L53 ANSWER 12 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:448265 HCAPLUS  
 DOCUMENT NUMBER: 133:58236  
 TITLE: Coated granular fertilizers and their manufacture  
 INVENTOR(S): Ono, Akimasa; Sakamoto, Satoshi  
 PATENT ASSIGNEE(S): Asahi Chemical Industry Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000185991	A2	20000704	JP 1998-366764	19981224

PRIORITY APPLN. INFO.: JP 1998-366764 19981224

AB The coated fertilizers are manufactured by coating granular fertilizers with  
 films containing polysaccharides having particle sizes and particle size  
 distribution satisfying the relation  $0 < (A - B)/C \leq 1.70$   
 [C = 5-40, A, B, and C are 90%, 10%, and 50% particle sizes  
 ( $\mu\text{m}$ ), resp.] and resins. Granular urea fertilizers were sprayed with a  
 solution containing Suntec LD-M 2270 (LDPE) 150, corn starch [A = 34.9, B  
 = 10.1, C = 19.1 ( $\mu\text{m}$ ); (A - B)/C = 1.30; water content 0.81]  
 and talc 135 g to give coated granules showing a sigmoidal pattern of N  
 release for .apprx.40 days.

IC ICM C05G003-00  
 ICS B01J002-00

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

ST granular fertilizer coating polysaccharide LDPE; starch LDPE coating  
 granular fertilizer; **controlled release** fertilizer  
 granule coating starch

IT Polysaccharides, biological studies

- RL: **AGR (Agricultural use)**; PRP (Properties); BIOL (Biological study); USES (Uses)  
 (controlled-release granular fertilizers coated with polysaccharide-resin mixts.)
- IT **Agrochemical formulations**  
 (controlled-release; controlled-release granular fertilizers coated with polysaccharide-resin mixts.)
- IT **Agrochemical formulations**  
 (granules; controlled-release granular fertilizers coated with polysaccharide-resin mixts.)
- IT **Fertilizers**  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (nitrogen-phosphorus-potassium; controlled-release granular fertilizers coated with polysaccharide-resin mixts.)
- IT **Fertilizers**  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (nitrogen-potassium; controlled-release granular fertilizers coated with polysaccharide-resin mixts.)
- IT **Fertilizers**  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (potassium sulfate; controlled-release granular fertilizers coated with polysaccharide-resin mixts.)
- IT **Coating process**  
 (spray; controlled-release granular fertilizers coated with polysaccharide-resin mixts.)
- IT **Fertilizers**  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (urea; controlled-release granular fertilizers coated with polysaccharide-resin mixts.)
- IT 9002-88-4, Suntec LD-M 2270  
 RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
 (LDPE; controlled-release granular fertilizers coated with polysaccharide-resin mixts.)
- IT 57-13-6, Urea, biological studies 7723-14-0, Phosphorus, biological studies 7727-37-9, Nitrogen, biological studies 7778-80-5, Potassium sulfate, biological studies  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (controlled-release granular fertilizers coated with polysaccharide-resin mixts.)
- IT 9004-34-6, Cellulose, biological studies 9005-25-8, Starch, biological studies  
 RL: **AGR (Agricultural use)**; PRP (Properties); BIOL (Biological study); USES (Uses)  
 (controlled-release granular fertilizers coated with polysaccharide-resin mixts.)

L53 ANSWER 13 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:306783 HCAPLUS

DOCUMENT NUMBER: 133:58174

TITLE: Longevities and nitrogen, phosphorus, and potassium release patterns of polymer-coated controlled-release fertilizers at 30°C and 40°C

AUTHOR(S): Huett, David O.; Gogel, Beverley J.  
 CORPORATE SOURCE: Tropical Fruit Research Station, NSW Agriculture,  
 Alstonville, 2477, Australia  
 SOURCE: Communications in Soil Science and Plant Analysis  
 (2000), 31(7 & 8), 959-973  
 CODEN: CSOSA2; ISSN: 0010-3624  
 PUBLISHER: Marcel Dekker, Inc.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

- AB The weekly nitrogen (N), phosphorus (P), and potassium (K) release from 17 polymer-coated controlled-release fertilizer (CRF) formulations of Nutricote, Apex Gold, Osmocote, and a 9-mo Macrocoate were measured at  $30.6 \pm 0.8^\circ$  and  $40.0 \pm 1.5^\circ$ . Five grams of each CRF were placed at a depth of 50 mm in 280+50 mm acid washed then rinsed silica sand columns which were leached with deionized water three times each week until **nutrient** recovery ceased. The volume of leachate was recorded each week and subsampled for ammonium-N, nitrate-N, phosphate-P, and K analyses. Each CRF treatment was replicated three times at each temperature. **Nutrient** release profiles were determined **Longevities**, measured as weeks to 90% **nutrient** recovery, were considerably shorter than the nominal release periods for all formulations. Within each CRF product group, the **longevity** of 9 and 12 mo formulations were similar, with Apex Gold 12-14 mo high nitrate having the longest (38 wk for N at  $30^\circ$ ) and Osmocote 8-9 mo the shortest (23 wk for N at  $30^\circ$ ). There were consistent trends in the **nutrient** release periods across all CRFs with  $P > K > N$  and with differences of around 10% in duration between **nutrients**. The P:N release ratio exceeded 0.10 for most CRFs during the early release period indicating an adequate P supply for most plant species. The mean reduction in **longevity** for Nutricote, Apex Gold, and Osmocote formulations for an increase in incubation temperature from  $30^\circ$  to  $40^\circ$  was 19-21% for N, 13-14% for P, and 14-15% for K. All CRFs released **nutrients** unevenly with the highest rate occurring during the early part of the release period. This pattern was accentuated at  $40^\circ$  and by the shorter term release formulations. The **nutrient** release rates of all CRFs declined steadily after their maxima.
- CC 19-3 (Fertilizers, Soils, and Plant Nutrition)
- ST polymer coated fertilizer **nutrient release** temp; nitrogen **release** polymer coated fertilizer temp; phosphorus **release** polymer coated fertilizer temp; potassium **release** polymer coated fertilizer temp
- IT **Agrochemical** formulations  
 (controlled-release; **longevities** and nitrogen, phosphorus, and potassium release patterns of polymer-coated controlled-release fertilizers response to temperature)
- IT Dissolution rate  
 (**longevities** and nitrogen, phosphorus, and potassium release patterns of polymer-coated controlled-release fertilizers response to temperature)
- IT **Polymers, biological studies**  
 RL: AGR (**Agricultural use**); BIOL (Biological study); USES (Uses)  
 (**longevities** and nitrogen, phosphorus, and potassium release patterns of polymer-coated controlled-release fertilizers response to temperature)
- IT Fertilizers  
 RL: BPR (Biological process); BSU (Biological study, unclassified); PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process)  
 (nitrogen-phosphorus-potassium; **longevities** and nitrogen,



phosphorus, and potassium release patterns of polymer-coated controlled-release fertilizers response to temperature)

IT 7440-09-7, Potassium, biological studies 7723-14-0, Phosphorus, biological studies 7727-37-9, Nitrogen, biological studies  
 RL: BPR (Biological process); BSU (Biological study, unclassified); PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process)

(longevities and nitrogen, phosphorus, and potassium release patterns of polymer-coated controlled-release fertilizers response to temperature)

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 14 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:259920 HCAPLUS

DOCUMENT NUMBER: 132:261687

TITLE: Controlled-release coated fertilizer

INVENTOR(S): Tijsma, Edze Jan; Terlingen, Johannes Gijsbertus Antonius; Van Kaathoven, Hendrikus Gijsbertus Adrianus

PATENT ASSIGNEE(S): OMS Investments, Inc., USA

SOURCE: PCT Int. Appl., 39 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000021367	A1	20000420	WO 1999-US23719	19991012
W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
US 6139597	A	20001031	US 1998-172055	19981014
CA 2346710	AA	20000420	CA 1999-2346710	19991012
EP 1123001	A1	20010816	EP 1999-954856	19991012
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
JP 2002527325	T2	20020827	JP 2000-575364	19991012
AU 752525	B2	20020919	AU 2000-11100	19991012
NZ 511086	A	20030429	NZ 1999-511086	19991012
ZA 2001002919	A	20020709	ZA 2001-2919	20010409
NO 2001001824	A	20010606	NO 2001-1824	20010410

PRIORITY APPLN. INFO.: US 1998-172055 A 19981014  
 WO 1999-US23719 W 19991012

AB A controlled release fertilizer is provided which exhibits a Gaussian **nutrient** release rate pattern. The fertilizer composition includes a granular **nutrient** core material, having a single layer coating of a water-insol., uniform, continuous polymer film thereon. such as an alkyd resin film.

IC ICM A01N025-26

ICS C05G005-00

CC 5-6 (Agrochemical Bioregulators)

IT Alkyd resins

**Polymers, uses**

RL: MOA (Modifier or additive use); USES (Uses)  
(coating on controlled-release fertilizer core with Gaussian  
nutrient release rate)

IT **Fertilizers**

RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
(controlled-release; coated fertilizer  
core with Gaussian nutrient release rate)

IT **Fertilizers**

RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
(nitrogen-phosphorus-potassium; coated fertilizer  
core with Gaussian nutrient release rate)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 15 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:139125 HCAPLUS

DOCUMENT NUMBER: 132:190858

TITLE: **Agrochemical** particles for manufacture of  
resin-coated granules and use of these  
**controlled-release** granules in  
cultivating crops

INVENTOR(S): Kimoto, Shigetoshi; Takahashi, Atsushi

PATENT ASSIGNEE(S): Chisso Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000063205	A2	20000229	JP 1998-232720	19980819
PRIORITY APPLN. INFO.:			JP 1998-232720	19980819

AB Granules with superior controlled-release function are obtained by covering the surface of agrochem. particles with a coating having resin as the principal component. The particles contain bentonite and a binder and have a disintegration rate of 0.001-2% after a breakdown treatment by shaking. Thus, particles containing bentonite 70, Na CMC 5, **calcium** carbonate 22, and 1,2,5,6-tetrahydropyrrolo[3,2,1-ij]quinolin-4-one 3% by weight were coated with PEG and KI Gel 201K-F2 (1st layer) and ethylene-carbon monoxide copolymer and talc (2nd layer) to obtain timed-release granules that did not cause injury to rice seedlings.

IC ICM A01N025-26

ICS A01N025-08; A01N025-10; A01N025-12

CC 5-6 (Agrochemical Bioregulators)

ST **agrochem** granule manuf bentonite particle resin coating

IT Binders

**Coating materials**

(**agrochem.** particles for manufacture of resin-coated  
granules and use of these **controlled-release**  
granules in cultivating crops)

IT Bentonite, biological studies

Polyolefins

Polyoxyalkylenes, biological studies

RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)

(**agrochem.** particles for manufacture of resin-coated  
granules and use of these **controlled-release**  
granules in cultivating crops)

IT **Agrochemical** formulations  
 (controlled-release; agrochem. particles  
 for manufacture of resin-coated granules and use of these  
 controlled-release granules in cultivating crops)

IT 9002-88-4, Polyethylene 9006-26-2D, Ethylene-maleic anhydride copolymer,  
 maleimide-modified 14807-96-6, Talc, biological studies 24937-78-8,  
 Ethylene-vinyl acetate copolymer 25052-62-4, Ethylene-carbon monoxide  
 copolymer 25322-68-3, PEG 26426-80-2, KI Gel 201K-F2 57369-32-1  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (agrochem. particles for manufacture of resin-coated  
 granules and use of these controlled-release  
 granules in cultivating crops)

IT 9000-30-0D, Guar gum, cationized 9002-89-5, Polyvinyl alcohol  
 9003-04-7, Sodium polyacrylate 9004-32-4, Sodium CMC 9004-34-6D,  
**Cellulose**, derivs., biological studies 9004-53-9, Dextrin  
 9004-62-0, Hydroxyethyl **cellulose** 9005-25-8, Starch,  
 biological studies  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (binder; agrochem. particles for manufacture of resin-  
 coated granules and use of these controlled-  
 release granules in cultivating crops)

L53 ANSWER 16 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN  
 ACCESSION NUMBER: 2000:137211 HCAPLUS  
 DOCUMENT NUMBER: 132:180046  
 TITLE: **Timed-release** coated granulated  
 fertilizers and their production method  
 INVENTOR(S): Uchino, Masazumi  
 PATENT ASSIGNEE(S): Chisso Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000063192	A2	20000229	JP 1998-247846	19980818
WO 2001038261	A1	20010531	WO 1999-JP6469	19991119

W: CN, KR, US  
 RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,  
 PT, SE

PRIORITY APPLN. INFO.: JP 1998-247846 A 19980818

AB Fertilizer particles for raising containerized seedlings are coated with a  
 coating containing a granular filler with a length:breadth ratio of  $\leq 3$   
 and with a moisture content of  $\leq 10\%$  by weight Release of fertilizer  
 components from the coated granules is characterized by an early period  
 (D1), when release is inhibited so **nutrient** levels will not  
 cause injury, and a dissoln. period (D2). Thus, core particles were made  
 by mixing urea with inert carrier (bentonite and clay) and granulating.  
 The particles were coated with material containing low-d. polyethylene 35,  
 talc 55, and filler (Orgasol 2002UD, 0.8% moisture, length:breadth ratio  
 of 1.2) 10% by weight to obtain a product with D1 and D2 periods of 50 and  
 100 days, resp. (D1/D2 = 0.5).

IC ICM C05G003-00  
 ICS B01J002-00

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
 Section cross-reference(s): 42

ST **controlled release** fertilizer coating filler

IT **Agrochemical formulations**  
(**controlled-release; timed-release coated granulated fertilizers** and their production method)

IT **Fertilizers**  
RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
(**controlled-release; timed-release coated granulated fertilizers** and their production method)

IT Coating materials  
Fillers  
(**timed-release coated granulated fertilizers** and their production method)

IT 24937-16-4, Orgasol 2002ES5 110171-93-2, Isobam 10 125200-58-0, Orgasol 2002UD  
RL: **AGR (Agricultural use)**; MOA (Modifier or additive use); BIOL (Biological study); USES (Uses)  
(filler; **timed-release coated granulated fertilizers** and their production method)

IT 9004-34-6, Cellulose, biological studies  
RL: **AGR (Agricultural use)**; MOA (Modifier or additive use); BIOL (Biological study); USES (Uses)  
(gels, filler; **timed-release coated granulated fertilizers** and their production method)

IT 57-13-6, Urea, biological studies  
RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
(**timed-release coated granulated fertilizers** and their production method)

IT 9002-88-4, Polyethylene 14807-96-6, Talc, biological studies  
RL: **AGR (Agricultural use)**; TEM (Technical or engineered material use); BIOL (Biological study); USES (Uses)  
(**timed-release coated granulated fertilizers** and their production method)

L53 ANSWER 17 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN  
ACCESSION NUMBER: 1999:511117 HCAPLUS  
DOCUMENT NUMBER: 131:129440  
TITLE: Film-coated fertilizer with **controlled-release of nutrients**  
INVENTOR(S): Erhardt, Klaus  
PATENT ASSIGNEE(S): Basf Aktiengesellschaft, Germany  
SOURCE: PCT Int. Appl., 40 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: German  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9940046	A1	19990812	WO 1998-EP671	19980206
W: BG, BR, BY, GE, HU, IL, LT, LV, NO, RO, RU, SG, SI, SK, TR				
PRIORITY APPLN. INFO.:			WO 1998-EP671	19980206
AB The invention relates to a fertilizer which is coated with a film and contains $\leq 20$ mL vols. of a <b>nutrient</b> , the vols. being individually coated. The film coating the <b>nutrient</b> contains a water-permeable biodegradable polymer, a cellulosic material, a textile material, a lignocellulosic material or a combination of at least two of				

these materials.

IC ICM C05G003-00  
 CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
 ST film coated **sustained release** fertilizer  
 IT **Fertilizers**  
 RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
 (**controlled-release; film-coated**)  
 IT Textiles  
 (in film coating of **controlled-release** fertilizers)  
 IT **Polymers, uses**  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (water-permeable, biodegradable; in film coating of **controlled-release** fertilizers)  
 IT 9004-34-6, **Cellulose**, uses 11132-73-3, Lignocellulose  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (in film coating of **controlled-release** fertilizers)  
 REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 18 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1999:205522 HCAPLUS

DOCUMENT NUMBER: 130:278034

TITLE: **Controlled-release**  
**agrochemical** granule blends and cultivation  
 method using the **coated** granules

INVENTOR(S): Kimoto, Shigetoshi; Takahashi, Atsushi

PATENT ASSIGNEE(S): Chisso Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11079903	A2	19990323	JP 1997-257728	19970905
PRIORITY APPLN. INFO.:			JP 1997-257728	19970905

AB Controlled-release agrochem. formulations are obtained by mixing  $\geq 2$  kinds of granules that differ in temperature dependency of the period when release is suppressed; the granules are coated with a coat consisting of a thermoplastic resin and  $\geq 1$  water-insol. or poorly soluble powder. The formulations are superior as regards **suppression** of the **initial release** of active ingredients. Thus, particles (diameter 0.8-1.4 mm) containing 5.5% O,S-Di-Me N-acetylphosphoramidothioate (I) were obtained by mixing 95% I 6, bentonite 70, and clay 24 parts by weight, extruding and granulating the blend, and drying. In a spouted bed coating apparatus, the granules were coated with ethene-carbon monoxide copolymer 5 parts and talc 95 parts (1st layer, 17%) and low-d. polyethylene 20 and talc 80 parts (2nd layer, 3%): Similarly, particles containing 5% of a second pesticide were prepared with 75% 5-methyl-1,2,4-triazolo[3,4-b]benzothiazole 7, bentonite 70, clay 20, and talc 3 parts by weight; these granules were coated with polyethylene 30 and talc 70 parts (22% coating). A 1:1 mixture of these coated granules was applied to rice without causing chemical injury to seedlings grown at 15, 20, or 27°.

IC ICM A01N025-12  
 ICS A01N025-08; A01N025-18; A01N025-26  
 CC 5-6 (Agrochemical Bioregulators)

- ST **controlled release agrochem granule blend**  
**thermoplastic powder coating**
- IT Polyoxyalkylenes, biological studies  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (**controlled-release agrochem. granule**  
 blends with **coatings** comprising **thermoplastic resin**  
 and powder)
- IT Rice (Oryza sativa)  
 (**controlled-release agrochem. granule**  
 blends with **coatings** comprising **thermoplastic resin**  
 and powder for use in cultivation of)
- IT **Agrochemical formulations**  
 (**controlled-release, granules; controlled**  
**-release agrochem. granule blends with**  
**coatings** comprising **thermoplastic resin and powder**)
- IT Plastics, biological studies  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (**thermoplastics; controlled-release**  
**agrochem. granule blends with coatings** comprising  
**thermoplastic resin and powder**)
- IT 1305-62-0, **Calcium hydroxide**, biological studies 25052-62-4,  
 Ethylene-carbon monoxide copolymer 25322-68-3, Polyethylene glycol  
 113150-53-1, BM 30 222613-16-3, KI Gel 201F2  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (**controlled-release agrochem. granule**  
 blends with **coatings** comprising **thermoplastic resin**  
 and powder)
- IT 30560-19-1, O,S-Dimethyl N-acetylphosphoramidothioate  
 41814-78-2, 5-Methyl-1,2,4-triazolo[3,4-b]benzothiazole  
 RL: AGR (Agricultural use); PEP (Physical, engineering or chemical  
 process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (**controlled-release agrochem. granule**  
 blends with **coatings** comprising **thermoplastic resin**  
 and powder)
- IT 9002-88-4, Polyethylene  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (low-d.; **controlled-release agrochem.**  
 granule blends with **coatings** comprising **thermoplastic**  
 resin and powder)

L53 ANSWER 19 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1998:790946 HCAPLUS

DOCUMENT NUMBER: 130:51803

TITLE: A mechanism of **nutrient** release from  
 resin-coated fertilizers and its estimation by kinetic  
 methods. 5. Effect of soil moisture level on release  
 rates from resin-coated mixed fertilizer

AUTHOR(S): Fujisawa, Eiji; Kobayashi, Arata; Hanyu, Tomoji

CORPORATE SOURCE: ZEN-NOH Agric. R & D Cent., Hiratsuka, 254-0016, Japan

SOURCE: Nippon Dojo Hiriyogaku Zasshi (1998), 69(6), 582-589

CODEN: NIDHAX; ISSN: 0029-0610

PUBLISHER: Nippon Dojo Hiryo Gakkai

DOCUMENT TYPE: Journal

LANGUAGE: Japanese

AB The release of **nutrients** from a thermoplastic resin-coated NPK  
 mixed fertilizer were studied at different temps. and soil moistures,  
 ranging from the near-field moisture capacity to the level lower than  
 air-dry soil. From the soil moisture content, water vapor pressure was  
 estimated to carry out the simulation studies. The effects of osmotic  
 potential and diffusion of **nutrients** outside the granules of the

coated fertilizer on the release rate were also discussed. The release rates of the **nutrients** were higher in the order of nitrogen (ammonium and nitrate), potassium and phosphate. The pattern of each **nutrient** release fitted well with our simulation model reported previously. The release rate of nitrogen was the same as the estimated value in the solution under the condition in which the soil moisture content levels were higher than 40% (0.7 MPa of water potential) of the maximum water holding capacity. However, the release rate decreased as the level of soil moisture decreased below this point, and became nil at about 100 MPa of water potential. The water vapor pressure was estimated from the moisture content of the soil, and the temperature corresponding to the vapor pressure of pure water was calculated. Using the calculated temperature, the **nutrient** release was simulated with the proposed model, but the simulated values were slightly higher than the observed values. We considered that the vapor pressure in the close vicinity of the fertilizer granules may have been lower than the estimated value under the low moisture condition in which the solution from the granules tended to stagnate and the diffusion outside the granules decreased.

CC 19-3 (Fertilizers, Soils, and Plant Nutrition)

ST **nutrient** release coated fertilizer soil moisture

IT **Fertilizers**

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses) (**controlled-release**; effect of soil moisture level on release rates from resin-coated mixed fertilizer)

IT **Fertilizers**

RL: **AGR (Agricultural use)**; PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process); USES (Uses) (nitrogen-phosphorus-potassium; effect of soil moisture level on release rates from resin-coated mixed fertilizer)

IT Plastics, biological studies

RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses) (**thermoplastics**; effect of soil moisture level on release rates from resin-coated mixed fertilizer)

IT 7440-09-7, Potassium, biological studies 7727-37-9, Nitrogen, biological studies 14265-44-2, Phosphate, biological studies

RL: **AGR (Agricultural use)**; PRP (Properties); BIOL (Biological study); USES (Uses) (effect of soil moisture level on release rates from resin-coated mixed fertilizer)

L53 ANSWER 20 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1998:56009 HCAPLUS

DOCUMENT NUMBER: 128:101561

TITLE: Coated potassium fertilizer granules with good **controlled release** properties and storage stability

INVENTOR(S): Uchino, Masazumi; Ashihara, Michiyuki

PATENT ASSIGNEE(S): Chisso Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10017389	A2	19980120	JP 1996-188196	19960628

JP 3496400 B2 20040209  
 PRIORITY APPLN. INFO.: JP 1996-188196 19960628  
 AB The title granules, which start releasing fertilizers a certain time after their application, are coated with cellulose and/or its derivative powders dispersed in thermoplastic resins. K2SO4 granules coated with CMC Ca salt and low-d. polyethylene were preserved for 44 days to show good controlled-release properties.  
 IC ICM C05G003-00  
 ICS C05G003-00; C05D001-00  
 CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
 ST controlled release cellulose coated potassium fertilizer; thermoplastic resin coated potassium fertilizer granule; polyethylene CMC coated potassium sulfate granule  
 IT Agrochemical formulations  
 (controlled-release; coated potassium fertilizer granules with good controlled release properties and storage stability)  
 IT Agrochemical formulations  
 (granules; coated potassium fertilizer granules with good controlled release properties and storage stability)  
 IT Fertilizers  
 RL: AGR (Agricultural use); PRP (Properties); BIOL (Biological study); USES (Uses)  
 (potassium; coated potassium fertilizer granules with good controlled release properties and storage stability)  
 IT Plastics, biological studies  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (thermoplastics; coated potassium fertilizer granules with good controlled release properties and storage stability)  
 IT 9004-32-4 9004-34-6, Cellulose, biological studies  
 9004-57-3, Ethylcellulose 9004-62-0, Hydroxyethyl cellulose  
 9004-64-2, Hydroxypropyl cellulose 9004-67-5, Methylcellulose  
 9050-04-8, Carboxymethyl cellulose calcium salt  
 37205-99-5, Carboxymethyl ethylcellulose  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (coated potassium fertilizer granules with good controlled release properties and storage stability)  
 IT 7447-40-7, Potassium chloride, biological studies 7778-80-5, Potassium sulfate, biological studies  
 RL: AGR (Agricultural use); PRP (Properties); BIOL (Biological study); USES (Uses)  
 (coated potassium fertilizer granules with good controlled release properties and storage stability)  
 IT 9002-88-4, Polyethylene  
 RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (low-d.; coated potassium fertilizer granules with good controlled release properties and storage stability)

L53 ANSWER 21 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN  
 ACCESSION NUMBER: 1997:526061 HCAPLUS  
 DOCUMENT NUMBER: 127:205057  
 TITLE: Manufacture of sustained-release granular fertilizers coated with thermoplastic resins  
 INVENTOR(S): Nakamura, Hiroshi; Nanbu, Fumio  
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.



DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

CODEN: JKXXAF

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09202683	A2	19970805	JP 1996-8942	19960123
TW 464640	B	20011121	TW 1997-86100585	19970121
AU 9712282	A1	19970814	AU 1997-12282	19970122
AU 695280	B2	19980813		

PRIORITY APPLN. INFO.: JP 1996-8942 A 19960123

AB The title fertilizers are manufactured by (A) rotating granular fertilizers, (B) adding liquid uncured thermoplastic resins to the rotated granules to form 1-10  $\mu$ m-thick coating layer, (C) thermosetting the resins with rotating the granules, and (D) repeating the above processes  $\geq 1$  time(s). Sumidur 44V10 (polymeric MDI), Sumiphen TM (branched polyether polyol), and 2,4,6-tris(dimethylaminomethyl)phenol were added to urea granules at 70-75° in a rotator to coat the granules. The process was repeated 16 times with a 3-min interval and cured 70-75° for 10 min to give sustained-release granules.

IC ICM C05G003-00

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

ST **sustained release** fertilizer granule coating  
**thermoplastic**; urea granule **sustained release**  
 coating polyurethane

IT Polymerization catalysts  
 (amines; **sustained-release** granular fertilizers  
 coated with **thermoplastic** resins)

IT Polyurethanes, biological studies  
 RL: **AGR (Agricultural use)**; PRP (Properties); SPN (Synthetic  
 preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)  
 (polyether-; **sustained-release** granular  
**fertilizers coated with thermoplastic**  
 resins)

IT Epoxy resins, biological studies  
 Polyurethanes, biological studies  
 RL: **AGR (Agricultural use)**; PRP (Properties); BIOL (Biological  
 study); USES (Uses)  
 (**sustained-release** granular fertilizers  
 coated with **thermoplastic** resins)

IT **Fertilizers**  
 RL: **AGR (Agricultural use)**; PRP (Properties); BIOL (Biological  
 study); USES (Uses)  
 (**sustained-release**; **sustained-**  
**release** granular fertilizers coated with  
**thermoplastic** resins)

IT Plastics, biological studies  
 RL: **AGR (Agricultural use)**; PRP (Properties); BIOL (Biological  
 study); USES (Uses)  
 (**thermoplastics**; **sustained-release**  
 granular fertilizers coated with  
**thermoplastic** resins)

IT 90-72-2, 2,4,6-Tris(dimethylaminomethyl)phenol  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalyst; **sustained-release** granular fertilizers  
 coated with **thermoplastic** resins)

IT 57-13-6, Urea, biological studies  
 RL: **AGR (Agricultural use)**; PEP (Physical, engineering or

chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (sustained-release granular fertilizers  
 coated with thermoplastic resins)

IT 57029-46-6P

RL: AGR (Agricultural use); PRP (Properties); SPN (Synthetic  
 preparation); BIOL (Biological study); PREP (Preparation); USES (Uses)  
 (sustained-release granular fertilizers  
 coated with thermoplastic resins)

L53 ANSWER 22 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1997:168592 HCAPLUS

DOCUMENT NUMBER: 126:211536

TITLE: Method for manufacturing coated granular fertilizers

INVENTOR(S): Adachi, Koichi; Terada, Yasushi; Zensei, Kengo

PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan

SOURCE: Jpn. Kokai Tokyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09030884	A2	19970204	JP 1995-181732	19950718
PRIORITY APPLN. INFO.:			JP 1995-181732	19950718

AB A fertilizer with less **nutrient** loss during the period when  
 release is inhibited is obtained by coating the surface of fertilizer  
 granules that have a short axis/long axis ratio of 0.80-0.95 with a  
 coating containing a polymer. Granular urea with a short axis/long axis ratio  
 of 0.930 was coated with low-d. polyethylene containing polyoxyethylene  
 nonylphenyl ether (Emulgen 909) as release-controlling agent to obtain a  
 10% coating rate. The **initial release** rate (for 2 wk  
 at 25°) was 3.1%, in comparison with 40.5% for coated urea with a  
 short axis/long axis ratio of 0.695.

IC ICM C05G003-00

ICS C05G003-10; C05G005-00

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

Section cross-reference(s): 42

IT Polyolefins

RL: AGR (Agricultural use); PEP (Physical, engineering or  
 chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (controlled-release **fertilizer granule coating**  
 with)

IT Fertilizers

RL: AGR (Agricultural use); IMF (Industrial manufacture); PEP  
 (Physical, engineering or chemical process); BIOL (Biological study); PREP  
 (Preparation); PROC (Process); USES (Uses)  
 (controlled-release; manufacturing method for and **nutrient**  
**release** from **coated granular fertilizers**)

IT 9016-45-9, Emulgen 909

RL: AGR (Agricultural use); MOA (Modifier or additive use); BIOL  
 (Biological study); USES (Uses)  
 (controlled-release **fertilizer granule coating**  
 containing)

IT 9002-88-4, Polyethylene

RL: AGR (Agricultural use); PEP (Physical, engineering or  
 chemical process); BIOL (Biological study); PROC (Process); USES (Uses)  
 (low-d.; controlled-release **fertilizer granule**  
**coating** with)

L53 ANSWER 23 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1996:610019 HCAPLUS

DOCUMENT NUMBER: 125:246695

TITLE: High efficiency **controlled release**  
phosphate-based fertilizerINVENTOR(S): Wolstenholme, Jack; Pauly, Donald G.; Nyborg, Martin;  
Solberg, Elston

PATENT ASSIGNEE(S): Sherritt Inc., Can.

SOURCE: Eur. Pat. Appl., 7 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 731067	A2	19960911	EP 1996-301638	19960311
EP 731067	A3	19980211		
R: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
CA 2171506	AA	19960911	CA 1996-2171506	19960311
AU 9648029	A1	19960919	AU 1996-48029	19960312
			GB 1995-4875	19950310

## PRIORITY APPLN. INFO.:

AB The fertilizer comprises a water soluble phosphate **nutrient** core, such as mono- or diammonium phosphate. A moisture-permeable coating (sulfur, waxes, acrylates, cellulose derivs., etc.) encapsulates the **nutrient** core and is functional to release, at a predetd. rate,  $\geq 80\%$  thereof within 5-30 days of germination of the seed.

IC ICM C05B007-00

ICS C05G005-00

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

ST **controlled release** phosphate fertilizer

IT Superphosphates

RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
(high-efficiency **controlled release coated**  
phosphate **fertilizer**)

IT Acrylic polymers, uses

RL: MOA (Modifier or additive use); USES (Uses)  
(high-efficiency **controlled release coated**  
phosphate fertilizer)

IT Waxes and Waxy substances

RL: MOA (Modifier or additive use); USES (Uses)  
(high-efficiency **controlled release coated**  
phosphate fertilizer)

IT **Fertilizers**

RL: **AGR (Agricultural use)**; IMF (Industrial manufacture); BIOL  
(Biological study); PREP (Preparation); USES (Uses)  
(phosphorus, **controlled-release**, high-efficiency  
**controlled release coated phosphate**  
**fertilizer**)

IT 7722-76-1, Monoammonium phosphate. 7783-28-0, Diammonium phosphate.

RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
(high-efficiency **controlled release coated**  
phosphate **fertilizer**)

IT 7704-34-9, Sulfur, biological studies

RL: **AGR (Agricultural use)**; MOA (Modifier or additive use); BIOL  
(Biological study); USES (Uses)  
(high-efficiency **controlled release coated**

phosphate fertilizer)  
 IT 9004-34-6D, Cellulose, derivs.  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (high-efficiency **controlled release** coated  
 phosphate fertilizer)

L53 ANSWER 24 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN  
 ACCESSION NUMBER: 1995:257896 HCAPLUS  
 DOCUMENT NUMBER: 122:25903  
 TITLE: Coated pesticide microparticle agglomerates.  
 INVENTOR(S): Nastke, Rudolf; Neuenschwander, Ernst; Leonhardt,  
 Andreas  
 PATENT ASSIGNEE(S): Ciba-Geigy A.-G., Switz.  
 SOURCE: PCT Int. Appl., 17 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9422303	A1	19941013	WO 1994-EP881	19940321
W: AU, BB, BG, BR, BY, CA, CN, CZ, FI, GE, HU, JP, KG, KP, KR, KZ, LK, LV, MD, MG, MN, MW, NO, NZ, PL, RO, RU, SD, SI, SK, TJ, TT, UA, US, UZ, VN				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9465035	A1	19941024	AU 1994-65035	19940321
EP 691811	A1	19960117	EP 1994-912492	19940321
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE				
JP 08508274	T2	19960903	JP 1994-521624	19940321
IL 109117	A1	19980208	IL 1994-109117	19940324
ZA 9402296	A	19941003	ZA 1994-2296	19940331
US 5788991	A	19980804	US 1995-532550	19950929
PRIORITY APPLN. INFO.:			GB 1993-6808	19930401
			WO 1994-EP881	19940321

AB Agglomerates of microparticulate pesticides, or other biol.-active substances, are described. The microparticles are coated with a polymer, and the agglomerate is formed of a cluster of coated particles and is itself coated with the same polymer. There exist discrete phase boundaries between the particles and their coating layers, between the individual coating layers, and between the outer envelope layer(s) around the cluster and the particle coatings. Thus, the **initial release** rates observed in the prior art can be **suppressed**. The polymers are poly(melamine-formaldehyde), poly(urea-formaldehyde), polyurea, polyalkylglycols, polylactides, polyglycolides, etc. The agglomerates can be used in sustained-release formulations.

IC ICM A01N025-28  
 ICS B01J013-18

CC 5-4 (Agrochemical Bioregulators)

ST **sustained release** coated pesticide microparticle  
 agglomerate

IT **Fertilizers**

Plant hormones and regulators

RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
 (**sustained-release, coated** microparticle  
 agglomerates)

IT **Agrochemical formulations**  
 (**sustained-release, coated** pesticide

microparticle agglomerates)

L53 ANSWER 25 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN  
 ACCESSION NUMBER: 1995:234901 HCAPLUS  
 DOCUMENT NUMBER: 122:3590  
 TITLE: Sustained-release multiply-coated pesticide particles.  
 INVENTOR(S): Nastke, Rudolf; Neuenschwander, Ernst; Leonhardt, Andreas  
 PATENT ASSIGNEE(S): Ciba-Geigy A.-G., Switz.  
 SOURCE: PCT Int. Appl., 18 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9422302	A1	19941013	WO 1994-EP880	19940321
W: AU, BB, BG, BR, BY, CA, CN, CZ, FI, GE, HU, JP, KG, KP, KR, KZ, LK, LV, MD, MG, MN, MW, NO, NZ, PL, RO, RU, SD, SI, SK, TJ, TT, UA, US, UZ, VN				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9464286	A1	19941024	AU 1994-64286	19940321
EP 691810	A1	19960117	EP 1994-911938	19940321
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE				
JP 08508273	T2	19960903	JP 1994-521623	19940321
IL 109118	A1	19980208	IL 1994-109118	19940324
US 5773030	A	19980630	US 1995-532551	19950929
PRIORITY APPLN. INFO.:			GB 1993-6852	19930401
			WO 1994-EP880	19940321
AB Microparticulate pesticides are coated with $\geq 2$ layers of polymer, in which there is a discrete phase boundary formed between each coating layer and between the pesticide and the 1st coating layer. The coating thus formed is heterogeneous, since each successive layer is applied to a sublayer around which a boundary surface has already be formed. Thus, the high initial release rates of prior art are suppressed. Suitable polymers are poly(melamine-formaldehyde), poly(urea-formaldehyde), polyurea, polyalkylglycols, polylactides, polyglycolides, etc.				
IC	ICM A01N025-26			
	ICS A61K009-54			
CC	5-4 (Agrochemical Bioregulators)			
IT	Agrochemical formulations			
	(sustained-release, multiply-coated pesticide particles)			

L53 ANSWER 26 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN  
 ACCESSION NUMBER: 1993:443373 HCAPLUS  
 DOCUMENT NUMBER: 119:43373  
 TITLE: Coated pesticide granules containing bentonite and binders.  
 INVENTOR(S): Wada, Yuzuru; Koyama, Shigeji  
 PATENT ASSIGNEE(S): Nippon Bayer Agrochem K. K., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05000906	A2	19930108	JP 1991-303876	19911024
JP 3283552	B2	20020520		

PRIORITY APPLN. INFO.: JP 1990-323182 A1 19901128

AB Controlled-release pesticide granules are manufactured by coating nondisintegrating support cores with mixts. of pesticides, bentonite and aqueous binders comprising sugars, dextrin, hydroxypropylcellulose, CMC, Na alginate, poly(vinyl alc.), vinyl acetate polymers and/or acrylic polymer emulsions. Sand (93.10 weight parts) was sprayed with an aqueous solution containing

0.50 weight part surfactant and 0.40 weight part poly(vinyl alc.), mixed with 2.00 weight parts bentonite and 4.00 weight parts 2-benzothiazol-2-yloxy-N-methylacetanilide (I) and dried. The granules (50 mg) kept in water for 28 days showed 45.7% residual I.

IC ICM A01N025-26

ICS A01N025-08; A01N025-10; A01N025-14

CC 5-6 (Agrochemical Bioregulators)

ST pesticide granule bentonite sugar dextrin; **sustained release** pesticide coated granule; alginate polyvinyl alc pesticide granule; vinyl acetate polymer pesticide granule; acrylic polymer emulsion pesticide granule

IT Acrylic polymers, uses

Carbohydrates and Sugars, uses

RL: USES (Uses)

(pesticide granules containing bentonite and, **controlled-release**)

IT Bentonite, uses

RL: USES (Uses)

(pesticide granules containing binders and, **controlled-release**)

IT Sand

RL: USES (Uses)

(pesticide-coated, for **sustained release**)

IT Agrochemical formulations

(**sustained-release**, pesticidal, coated granules)

IT 108-05-4D, Acetic acid ethenyl ester, polymers containing 9002-89-5,

Poly(vinyl alcohol) 9004-32-4 9004-53-9, Dextrin 9004-64-2,

Hydroxypropyl cellulose ether 9005-38-3, Sodium alginate

RL: BIOL (Biological study)

(pesticide granules containing bentonite and, **controlled-release**)

IT 7631-86-9

RL: BIOL (Biological study)

(sand, pesticide-coated, for **sustained release**)

IT 73250-68-7 104030-54-8

RL: BIOL (Biological study)

(**sustained-release** coated granules containing)

L53 ANSWER 27 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1991:80550 HCAPLUS

DOCUMENT NUMBER: 114:80550

TITLE: One-step manufacture of controlled-**release** plant **nutrients**

INVENTOR(S): Moore, William P.

PATENT ASSIGNEE(S): Melamine Chemicals, Inc., USA

SOURCE: U.S., 6 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4969947	A	19901113	US 1988-180831	19880412
CA 1333338	A1	19941206	CA 1989-596538	19890412
			US 1988-180831	19880412

PRIORIT~~Y~~ APPLN. INFO.:  
 AB A 1-step method of preparing coated particulate plant **nutrients** is described wherein a polyfunctional coupling agent is applied to a mobile mass of plant **nutrient** particles containing functional groups which are chemical reactive with the functional groups (e.g. NH<sub>2</sub>, OH, etc.) of the coupling agent, while simultaneously applying a 2nd reactive material containing functional groups also reactive with the functional groups of the coupling agent, and maintaining the mobile mass at 30-300° until strong, water-insol. particles are formed. The product of the 1-step method is a controlled-release plant **nutrient** having excellent attrition resistance. Diphenylmethane diisocyanate polymer was sprayed onto N fertilizer (mobile mass) and simultaneously was blended with anhydrous polyol containing 5-55% OH and 5-15% triethanolamine, and the temperature was kept at 85-115° for 2-10 min to give the sustained-release fertilizer.

IC ICM C05C009-00  
 ICS C05C013-00  
 NCL 071028000  
 CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
 IT **Polyoxyalkylenes, biological studies**  
 RL: BIOL (Biological study)  
 (crosslinked, sustained-release fertilizer coated with)

IT 102-71-6, Triethanolamine, uses and miscellaneous 121-44-8,  
 Triethylamine, uses and miscellaneous 688-73-3 7664-41-7, Ammonia,  
 uses and miscellaneous 30323-21-8, Tin isooctoate 70519-09-4,  
 Iron isooctoate  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalyst, for manufacturing sustained-release fertilizer)

IT 7727-37-9  
 RL: **AGR (Agricultural use)**; BIOL (Biological study); USES (Uses)  
 (**fertilizers**, nitrogen, sustained-release, one-step manufacture of polyfunctional polymer-coated)

L53 ANSWER 28 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN  
 ACCESSION NUMBER: 1989:428540 HCAPLUS  
 DOCUMENT NUMBER: 111:28540  
 TITLE: Osmotic **sustained-release** drug formulation  
 INVENTOR(S): Baker, Richard W.; Brooke, James W.; Smith, Kelly L.  
 PATENT ASSIGNEE(S): Wellcome Foundation Ltd., UK  
 SOURCE: Can., 17 pp.  
 CODEN: CAXXA4  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CA 1239034	A1	19880712	CA 1984-461272	19840817
JP 61053214	A2	19860317	JP 1984-171411	19840817

JP 07005457	B4	19950125		
CA 1321754	B	19930831	CA 1992-616401	19920710
JP 06206817	A2	19940726	JP 1993-256174	19931013

PRIORITY APPLN. INFO.:

GB 1983-22007	19830816
GB 1983-22006	19830818
CA 1984-461272	19840817
JP 1984-171411	19840817

AB A composition is given for use in an aqueous environment, which comprises a formulation containing a water-soluble active ingredient, a semipermeable membrane surrounding the formulation, and particulate water-soluble pore-forming material dispersed within the membrane. In use in an aqueous environment, the pore-forming material is dissolved forming pores in the semipermeable membrane, the active ingredient is taken up in solution thus creating an osmotic pressure gradient across the membrane between the solution and the aqueous environment, and water from the aqueous environment is diffused through the semipermeable membrane into contact with the active ingredient concurrently, while a solution of the active ingredient is discharged through the pores of the membrane into the aqueous environment. Tablets made of 100 mg bupropion-HCl and 500 mg lactose were coated with a mixture of cellulose acetate, polyethylene glycol and lactose in acetone (50 g solids/L). The cellulose acetate-polyethylene glycol-lactose ratio was 40:40:20 and the coat weight was 27 mg. In simulated gastric buffer (pH 1.5), the bupropion release was 45% in 2 h and 70% in 4 h.

IC ICM A01N025-26

ICS A61K009-48

CC 63-6 (Pharmaceuticals)

Section cross-reference(s): 5, 19

ST **sustained release** osmotic tablet semipermeable coating; agrochem osmotic **sustained release** semipermeable coating

IT Carbohydrates and Sugars, biological studies

Salts, biological studies

Waxes and Waxy substances

RL: BIOL (Biological study)

(prill seed containing, for semipermeable membrane-coated **sustained -release** osmotic drug formulations)

IT 63-42-3, Lactose 497-19-8, Sodium carbonate, biological studies

9004-34-6, **Cellulose**, biological studies 9004-35-7,

**Cellulose** acetate 25322-68-3, Polyethylene glycol

RL: BIOL (Biological study)

(coating containing, for **sustained-release** osmotic drug formulations)

IT 57-50-1, biological studies 9005-25-8, Starch, biological studies

RL: BIOL (Biological study)

(prill seed containing, for semipermeable membrane-coated **sustained -release** osmotic drug formulations)

IT 50-78-2

RL: BIOL (Biological study)

(**sustained-release** osmotic formulation containing, semipermeable membrane-coated)

IT 345-78-8, d-Pseudoephedrine hydrochloride 550-70-9, Triprolidine hydrochloride

RL: BIOL (Biological study)

(**sustained-release** osmotic formulations, semipermeable membrane-coated)

IT 31677-93-7, Bupropion hydrochloride

RL: BIOL (Biological study)

(**sustained-release** osmotic tablets, semipermeable membrane-coated)



L53 ANSWER 29 OF 29 HCAPLUS COPYRIGHT 2004 ACS on STN  
 ACCESSION NUMBER: 1984:606118 HCAPLUS  
 DOCUMENT NUMBER: 101:206118  
 TITLE: **Controlled-release** agrochemical  
 composition  
 PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 59139301	A2	19840810	JP 1983-14457	19830131
JP 61039281	B4	19860903		

PRIORITY APPLN. INFO.: JP 1983-14457 19830131  
 AB Granules of a composition containing volatile agrochems. coated with a  
 cellulose  
 derivative are controlled-release agrochem. agents. Thus, a composition  
 containing  
 Aerosil (anhydrous silicic acid) 30, (Z)-11-tetradecenyl acetate  
 [20711-10-8] (sex pheromone) 30, hydroxypropylcellulose [9004-64-2] 1.5  
 parts, and EtOH was granulated. The granules (1 mm) were spray-coated  
 with 6% hydroxypropylmethylcellulose in EtOH. The granules released the  
 sex pheromone at 2.1 mg/day for 40 days.  
 IC A01N025-18; A01N049-00  
 CC 5-6 (Agrochemical Bioregulators)  
 ST pheromone **control release** compn; pesticide  
**control release** compn; tetradecenyl acetate  
**control release**  
 IT **Agrochemicals**  
 (volatile, **controlled release** preparation containing,  
**cellulose** derivs. as **coating** materials for)  
 IT 9000-11-7 9004-32-4 9004-35-7 9004-57-3 9004-62-0 9004-64-2  
 9004-65-3 9004-67-5 9032-42-2 9050-31-1 37205-99-5 71138-97-1  
 RL: BIOL (Biological study)  
 (as **coating** material for **controlled-release**  
 volatile **agrochem.**)  
 IT 91-20-3, biological studies 333-41-5 20711-10-8  
 RL: BIOL (Biological study)  
 (**controlled-release** preparation containing)

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